

**Final Public Report
Focused Audit of Affiliated Transactions
and Management Audit
of South Jersey Gas Company**

Volume One: Gas Supply

Public Version
(SHADED MATERIALS ARE CONFIDENTIAL)

Presented to the:

**Division of Audits
New Jersey Board of Public Utilities**

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I. Introduction

A. Audit Scope and Objectives

This report addresses the results of Liberty's examination of gas supply at South Jersey Gas (SJG) for the New Jersey Board of Public Utilities (BPU). Liberty's examination included the eight-year period specified in the request for proposals (RFP) that the BPU issued. Generally, this period included the years 1997-2004, subject to the availability of data. The RFP established the following areas of focus to include in this review:

- The effectiveness of SJG's procurement activities and strategy in obtaining the best possible gas prices for its customers
- Optimization of the best mix between price and reliability
- The overall competitiveness of the third party supplier market in SJG's territory, and SJG's pricing policies in relation to basic gas supply service
- The independence of the purchasing function in purchasing supplies, and whether it acted in the best interest of ratepayers
- The interrelationship among SJG and its affiliates, including whether there were sufficient controls and structure in place to ensure purchases were made in the best interest of ratepayers.

After performing an initial review of gas supply at SJG, Liberty divided its work and ultimately this report into seven primary areas, which allows for the focused treatment required by the RFP and a comprehensive and clear reporting of results. These seven areas include:

- Supply Planning and Strategy (forecasting and including transportation and storage)
- Organization, Staffing, and Controls
- Supply Operations (commodity purchasing, off-systems sales, hedging)
- Rates and Pricing
- Transportation of Customer-Owned Gas
- Marketing Interaction with Gas Supply
- Affiliate Gas Transactions.

With its Order No. 636, the U. S. Federal Energy Regulatory Commission (FERC) required separation of natural gas, the commodity, from the transportation, storage and redelivery capabilities that transform that commodity into on-demand, utility-type service. The FERC broke the supply function for LDCs into two parts: acquiring the necessary amounts of the commodity, and contracting for (or building) the delivery capacity required to make supply services available.

The particular questions to be addressed for the two parts of the function are different. Key areas of inquiry into commodity-supply include inventory levels, contract/spot mix, and short-term and long-term mix. The capacity part of the function requires inquiries into the adequacy of peak-day capacity resources; optimal mix of base-, intermediate- and peak-load delivery capacity for a given load shape, capacity planning for firm versus interruptible load, and the effectiveness of demand-side initiatives.

Capacity planning and acquisition is difficult for LDCs. While most LDCs have been buying at least some of their own gas since the mid-1980s, dealing directly with the capacity problem has been their responsibility only since the issuance of Order 636. Companies have a natural tendency to retain more capacity than they really need. At the same time, capacity planning and acquisition is under intensive scrutiny. The FERC's preferred method of pipeline rate design, straight-fixed-variable (*SFV*), makes it expensive for an LDC to hold capacity that is under-utilized, as that method loads all capacity costs into reservation fees that are typically paid by firm customers. *SFV* rates also invite questions of equity among classes of customers, because interruptible customers may avoid paying any pipeline capacity costs. These concerns create considerable pressure on LDCs to demonstrate that their performance of this part of the supply function is effective.

The Company has an aggressive secondary-market program of off-system sales and capacity release activities to mitigate the costs of holding this capacity. Other Liberty comparisons among the three New Jersey LDCs showed that SJG was the most successful of the three in recovering capacity costs in the secondary market. Despite this effort, however, SJG's secondary-market programs, like those of other LDCs, cannot expect to recover the full costs of capacity under contract.

The Company's secondary-market program has an important affiliate-relationship component. SJG's wholesale marketing affiliate, South Jersey Resources Group (*SJRG*), competes for the same customers as the utility's off-system sales program. This competition raises important questions to be answered about whether the two affiliates both have the resources and expertise to compete effectively. Moreover, *SJRG* keeps all of the margins from its sales, while the utility has to share its margins with its customers. Thus, it was appropriate to examine whether the utility program is conducted in a way that provides maximum benefit to utility customers.

The SJG unbundling program represents another area of particular interest in assessing the relationship between SJG's gas-supply capacity under contract and its markets. Many of SJG's customers buy their gas from a supplier other than SJG. SJG's rates for its gas sales service and its distribution transportation service are supposed to make the Company indifferent to its customers' choices. Nevertheless, the possibility of excess delivery capacity to SJG's city gates under contract requires careful analysis, particularly since affiliate South Jersey Energy (*SJE*) has such a strong position in that third-party market.

SJRG's management of SJG's hedging program presents a third area of interest from an affiliate-relations perspective. Hedging generally involves the buying and selling of physical gas and financial instruments. The items bought and sold are the same whether a particular hedge is being placed for the account of the affiliate or the utility. When the same entity is buying and selling the same thing for three different affiliates, the first question is whether management and controls systems are adequate to protect against mistakes. Second, the contribution of the three affiliates to parent-company profits differs. Thus, other things being equal, the traders may well have an incentive to record the most favorable trades to the unregulated affiliates, and the less favorable ones to the utility. Management and control systems must prevent this type of abuse. Finally, it is important to remember that wholesale energy marketing and trading is the business

that bankrupted Enron, and that has nearly bankrupted a number of other prominent energy firms. Thus, financial insulation for the utility is an important area of inquiry.

B. Company Profile

South Jersey Industries (SJI) is an energy services holding company that provides energy-related products and services through several wholly-owned subsidiaries and one joint venture. Initially founded in 1873 as the Atlantic City Gas & Water Company, the gas utility changed its name to South Jersey Gas Company in 1947 and was listed on the New York Stock Exchange in 1958. South Jersey Industries became a holding company in 1969, for the purpose of diversifying its operations beyond the regulated energy business. The active subsidiaries are described below. In 2003, SJI's operating revenues were approximately \$697 million, with approximately 70% of those revenues generated by the utility and 30% by its unregulated businesses. Operating income that year was some \$78 million, with 84% coming from the utility and the remaining 16% from the other subsidiaries. Net income was approximately \$35 million, with 77% coming from the utility and 33% from the other subsidiaries.

Table I-1. SJI Subsidiary Net Income

Company	2002 Net	2003 Net	5-Yr. Growth
SJG	\$23,222	\$26,608	7%
SJE	2,536	3,233	11%
SJRG	2,551	3,032	4%
Marina	301	1,121	43%
Other	802	559	35%
SJI	29,412	34,553	10%
EPS	\$2.43	\$2.73	6-7%

SJI has demonstrated strong and consistent earnings growth in the five years preceding the start of this audit. Earnings have grown in major part through increases in non-utility contribution. Utility and non-utility earnings have each increased by about the same dollar amount (\$6.2 million utility and \$6.4 million non-utility). The utility increase has been about 30 percent over the period, while non-utility earnings have increased by four times across the same duration. SJI earnings per share and dividends have also increased steadily. Earnings have gone from \$2.17 to \$2.73 and dividends increased from \$1.46 to \$1.56 per share from 1999 to 2003. SJI also substantially improved its balance sheet, while increasing dividends; equity reached 49 percent of capitalization by mid-2004. SJI predicts continued earnings growth, with its non-utility entities expected to outperform SJG in rates of growth.

SJI's performance for 2004 continued to be strong; its recent record earnings of \$43.0 million exceeded 2003 earnings by 24 percent. Earnings per share from continuing operations grew from \$2.73 to \$3.11 per share (a 14 percent increase). SJG contributed record net income of \$31.5 million in 2004, representing an 18 percent increase above 2003 income of \$26.6 million. SJI cited a number of contributing factors to utility earnings:

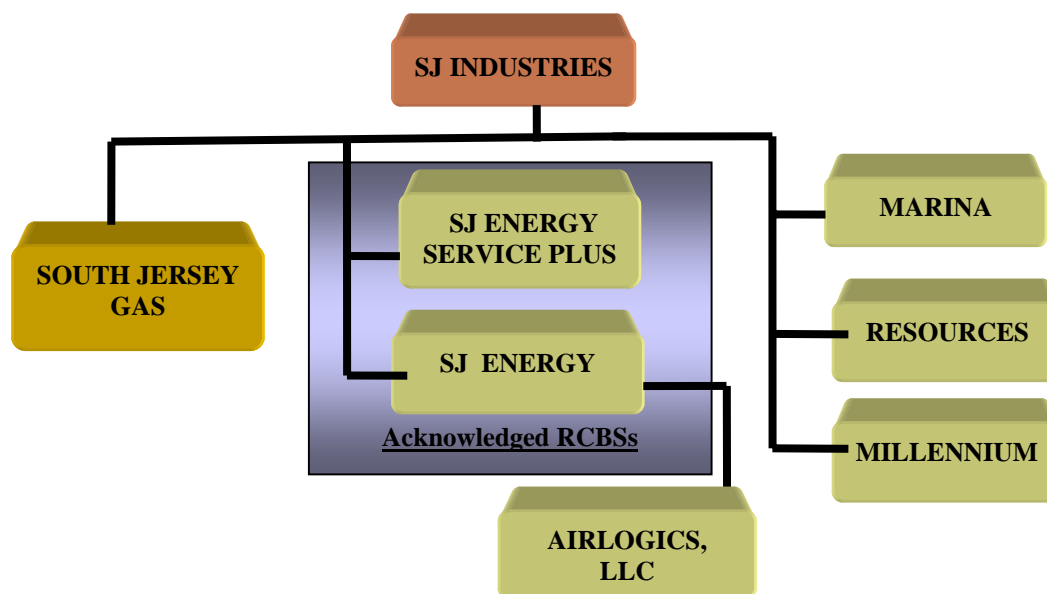
- New base rates established (\$5.3 million in net income for the second half of the year)

- Lower depreciation expense (rate-case levels generated \$1.4 of the \$5.3 million)
- Customer growth (increasing to a New Jersey high of 3 percent for 2004, or 9,017 customers; still far above the national average of 1.8 percent, and representing an annual gross margin of \$1.9 million)
- Lower interest expense (\$800,000 after tax reduction in interest expense, resulting primarily from 2003 and 2004 refinancings; SJG's embedded cost of long-term debt fell from year-end levels of 7.89 percent in 2002 to 6.35 percent in 2004).

SJG achieved this strong performance despite weather that proved 5.8 percent warmer than 2003 conditions. The Company estimated that this difference caused a reduction of \$1.2 million net income. SJI's non-utility income grew at a faster rate in 2004, from \$7.9 million in 2003 to \$11.5 million in 2004. This 45 percent increase made the non-utility share of total earnings 27 percent.

The following chart shows the overall organization of SJI enterprises.

Figure I-2. SJI Organization



South Jersey Gas Company (SJG) is a regulated utility, providing natural gas sales and transportation service to some 305,000 customers in a 2,500 square mile area covering Atlantic, Cape May, Cumberland, Salem and portions of Gloucester, Burlington and Camden counties in southern New Jersey. In 2003, SJG's operating revenues were approximately \$488 million on firm throughput of 54 billion cubic feet (Bcf) of gas sales and 71 Bcf of interruptible and off-system sales and capacity and storage release. SJG experienced customer growth of 2.7 percent from 1999 to 2003, (over 8,000 new customers and a 2.8 percent increase in 2003 alone). Its

growth significantly exceeds the national average and it remains New Jersey's fastest-growing gas utility.

SJG expects steady growth in all of the customers segments it serves. SJG has made significant investments to serve its growing customer base. For example, it spent approximately about \$300 million from 1997 to 2003 (\$53 million in 2003) on system improvements. SJG forecasts the need to spend over \$250 million across the next seven years. Its 567 employees in mid-2004 represented an approximately 10 percent reduction from its complement of five years earlier.

Off-system natural gas sales and capacity releases generated \$6.7 million in net income (a nine percent increase from 2002) and produced offsets of \$11.1 million for utility customers. SJG produced a 15 percent increase in net income in 2003 (a total of \$26.6 million).

Table I-3. SJG Operating Statistics

	2003	2002
Operating Revenues		
Utility	\$ 488	\$ 386
Non-Utility	\$ 209	\$ 119
Total	\$ 697	\$ 505
Operating Income	\$ 78	\$ 69
Income from Continuing Ops.	\$ 35	\$ 29
Net Income	\$ 33	\$ 29
Degree Days (Annual)		
Actual	4,929	4,380
Normal	4,613	4,625

South Jersey Energy Company (SJE) is an unregulated subsidiary, serving approximately 93,000 customers in the retail electricity and natural gas markets at the end of 2003. SJE divides its operations into two different business segments. Retail Energy operates as an energy marketer, providing natural gas and electricity to residential, commercial, and industrial customers. Energy Services engages in energy-related activities such as lighting retrofits, chiller and boiler improvements, steam systems, air handlers, compressed air systems, energy management systems, and distributed generation. SJE also holds SJI's half ownership interest in AirLogics, LLC (*AirLogics*), a joint venture with GZA GeoEnvironmental, Inc. AirLogics was formed in 2000 as a Delaware corporation that provides environmental monitoring devices and services associated primarily with site remediation activities.

SJE's net income grew by nearly 40 percent, to \$3.2 million in 2003. Continuing and strong customer growth of 23 percent (17,200 new customers in 2003) supported SJE's growth in profitability. SJE began to sell retail electricity to commercial and industrial customers in 2003. SJE experienced in 2004 a 64 percent earnings increase, to \$5.3 million, caused primarily by customer growth in the first half of the year, bulk sales of natural gas, commercial customer growth outside southern New Jersey, and industrial and institutional electricity sales.

South Jersey Resources Group (SJRG) was formed in 1996. From offices in Texas, SJRG engages in wholesale natural gas sales and risk-management transactions, including trading, sales storage management, peaking services, transportation capacity, and natural gas portfolio management, mainly in the Mid-Atlantic and southern regions of the United States.

In 2003, SJRG transacted 60.1 Bcf of gas. SJRG increased profitability by 19 percent, to \$3 million in 2003, in significant part due to higher volumes marketed, additional pipeline capacity and storage assets, and favorable market conditions. SJRG net income increased again in 2004 by seven percent, to \$3.3 million.

Marina Energy (Marina) develops energy production facilities for commercial and industrial markets. Marina's largest project is the development and operation of a thermal facility to provide cooling, heating, hot water, and electricity to The Borgata Resort in Atlantic City, which became operational in 2003. At the beginning of 2004, Marina Energy also purchased and now operates a three-unit, 8.4-megawatt cogeneration facility at the Salem County plant of Mannington Mills. Marina also has a 20-year agreement to provide all of the heating, cooling, and customer comfort systems at Resorts International hotel casino in Atlantic City. Marina Energy purchased and reconstructed the thermal production facilities for Resorts International. Marina also designed, constructed and manages a cogeneration plant for the Johnson-Matthey plant in West Deptford, New Jersey. Marina contributed \$1.1 million to SJI in 2003. Marina earnings increased to \$2.6 million in 2004, primarily because it was the first full year of operations at the Borgata project.

SJI has other subsidiaries that operate in business that do not involve gas supply. They are discussed immediately below. There also are existing subsidiaries that house discontinued businesses.

South Jersey Energy Service Plus, LLC (SJESP) was formed in 2004 as a wholly-owned SJI subsidiary (formerly South Jersey Gas Service Plus, LLC). SJESP provided gas-using appliances for consumers prior to August 2004, and thereafter began to provide appliance services, after the New Jersey Board of Public Utilities (BPU) approved the transfer of this business from SJG. During 2003, the last full year of operation of the appliance-service business by SJG, Appliance Service customers increased by seven percent, service contracts by six percent, and preventive maintenance contracts by 57 percent. SJESP net income increased from \$800,000 to \$1.1 million in 2004, with service-contract sales and higher installation activity accounting for most of the improvement.

Millennium Account Services is a joint venture, formed in 1999 and owned 50 percent by Conectiv Solutions and 50 percent by South Jersey Industries. It provides meter-reading services to the utility operations of both companies.

C. Industry Context

The following chronology briefly summarizes major national, state, and local events that have helped to shape the company and guide its evolving mix of supply assets over the past 25 years. That period has truly been an odyssey for LDCs. It includes a time of gas shortages, prohibition

on the connection of new customers, a legacy of purchasing full requirements from pipelines and a present market that is vibrantly competitive and highly volatile.

1978: To deal with gas shortages caused largely by a price regulation that held the price of gas to artificially low levels and discouraged new production, Congress passes the Natural Gas Policy Act, which begins deregulation of gas commodity at the wellhead and sets competition in motion.

1979: First SJG interruptible sales service, which tracks fuel oil prices.

First SJG interruptible transportation service, allowing transportation of customer-owned gas.

1985: FERC Order 500 allowed industrials to obtain capacity from pipelines.

1988: Prices of propane and fuel oil drop, resulting in significant loss to SJG in sales of gas. SJG's Firm Market Adjustment Clause (FMAC) instituted, allowing Company to stream specially-purchased, market-priced gas to customers with alternate fuel capability.

1992: BPU Order recognizes SJG interruptible margins (effective 1992-93 gas year) and institutes sharing. The first \$3.9 million goes to the Company (with a mechanism to get the money if revenues don't reach that level), followed by 80/20 (ratepayer/shareholder) sharing. The RMA (*Raw Materials Adjustment*) nomenclature was changed to the Levelized Gas Adjustment Clause (*LGAC*) to bring uniformity to the four gas utilities in NJ.

FERC Order 636 issued in April, with compliance anticipated by November 1, 1993.

1993: In December, BPU approves *Guidelines for Further Unbundling of New Jersey's Natural Gas Services*, making transportation available to all non-residential customers, with compliance expected by April 1, 1994. Looking ahead, the BPU indicates that transportation may be offered to residential customers in the future.

1994: The SJG unbundling tariff was adopted, in the context of a rate proceeding, making transportation available to all 16,500 C&I customers. Margin sharing was modified to provide the first \$4 million of margins to Company, followed by 80/20 sharing. By year-end, the BPU approved stipulations making all 240,000 C&I customers in New Jersey eligible for transportation service.

1997: In the context of a rate proceeding, a one-year SJG residential pilot was authorized, beginning August 1, 1997 for up to 10,000 customers on a first-come, first-served basis. The first year, enrollment reached 13,100. In subsequent years, eligibility was extended to 25,000 and then 50,000 customers. Margin sharing further developed, with the Company allowed to keep the first \$5 million of margins, followed by 80/20

sharing. The Company was also allowed to recover carrying costs for 3 construction projects through the LGAC until next rate case.

- 1999:** On February 9, Governor Whitman signs EDECA, which provided for transportation to be available to all residential customers by December 31, 1999, and directed the BPU to order appropriate tariff filings. The BPU directed that filings be submitted by April 30, 1999.
- 2000:** The cap on participation was lifted and full unbundling was effective statewide January 1. Tariffs were to be restructured to provide a single tariff for each of residential, commercial, and large volume classes, each of which were to have a transportation rate, a commodity supply rate, and a balancing rate. Bills were to be unbundled, clearly showing the supply charge and the price to compare. The companies were to offer “plain vanilla” BGSS, with quarterly LGAC filing.
- 2003:** A Statewide BGSS mechanism was approved by the Board, with filings due June 1, to be effective Oct 1 each year. Rates were to be adjusted periodically for residential and small commercial customers, and monthly for large C&I customers.
- 2004:** In context of rate proceeding, with SJG’s Capacity Allocation Charge petition from 2000 incorporated: GSG and GSG-LV tariff classifications were separated, and three electric generation classes were created. An open season was to be held for capacity assignment, the Company was to offer virtual storage, and a number of capacity and storage issues were to be discussed in Phase II of the case. The sharing formula was modified to an 80/20 sharing for all off-system sale, capacity-release and interruptible revenues, beginning with the first dollar.

The BPU Generic Customer Account Services Order provided that: consolidated billing will be available except in South Jersey’s territory, but not mandatory. The party providing consolidated billing will assume or purchase the receivables from the non-billing party, and may charge an administrative fee or discount the receivables, after BPU staff review.

Customer Data Cards, which were at one time agreed to, were found to be no longer cost justifiable, and would no longer be considered.

The marketplace for competitive metering in both electric and gas was not sufficiently developed to justify changes; the concept was tabled for at least two years, but may be revisited upon request of an industry participant or upon the board’s initiative.

- 2005:** Phase II of the 2004 rate proceeding is underway, with discovery expected to be completed in January and hearings scheduled for May.

D. The Previous Management Audit

An outside consulting firm performed a focused audit of certain gas-supply-related issues regarding SJG for the BPU in 1995. In particular, the audit focuses included:

- The existing capacity and supply portfolio
- Future capacity and supply strategies
- The purchase of firm capacity from SJE
- The purchase of off-system sales by SJE from the utility
- The gas cost allocation methodology.

These focus areas addressed subjects that formed an important part of Liberty's examination in this audit. The following items summarize the principal conclusions of that audit:

Procurement

- Culture drives SJG to have sufficient gas supplies under contract to meet the needs of existing and future firm and interruptible customers.
- The Company matches all of its firm pipeline transportation capacity with firm long-term supply agreements.
- The Company continues to rely on the interstate pipelines for gas supply, storage and transportation options to meet its service needs.
- In contracting for commodity supply, the Company's tries to obtain as long a contract term as possible, and not to use ladders.

Supply Planning – General

- The Company needs to explore and thoroughly evaluate the costs and ramifications of its assumption that it will always be "the supplier of last resort".
- The Company has attempted to integrate its marketing, supply and operating functions into the planning process but this effort needs to be expanded.
- The Company's supply-planning process virtually defaults to taking orders from its traditional pipeline suppliers rather than exploring alternative arrangements.
- The Company needs to significantly increase and expand its capability to generate alternative options and strategies. The current process is too rigid and inflexible and does not permit this.
- The Company's planning process needs to better reflect the changes from the past and anticipate the needs of the future.
- The Company needs to significantly increase the flexibility and responsiveness of its supply-planning process, and to increase its capability to quantify and evaluate the potential cost ramifications of its planning process.
- The Company does not do contingency or "what if" planning using probabilities in determining how much firm, swing, and flexibility to contract it requires; rather it has an extensive "belt-and-suspenders" approach replete with (redundant) flexibility options. An example of "insurance on insurance" to meet firm customer requirements includes a reserve margin on peak day in excess of projected needs, firm supply and storage contracts, production-area storage contracts, propane and LNG facilities behind city gate. The Company has not evaluated the cost of this "insurance".

Supply Planning – Specific

- The Company has not evaluated whether there are less costly means to deliver gas to the east side of its territory besides the installation of new transmission facilities.
- The Company has not adequately evaluated the costs of on-system peaking vs. storage, and storage vs. long-haul FT from traditional supply basins, or evaluated the potential of installing liquefaction capability at the existing LNG plant.

Affiliate Issues

- There do not appear to be any widespread or consistent abuses regarding transactions between SJG and SJE.
- Benefits to tariff customers can be increased if SJG is permitted to make non-tariff sales, transfers, or assignments to SJE and others at market-based prices.
- The only two material benefits being shared by SJG and SJE are creditworthiness and market presence.
- All utility sales to any third party, including SJE, should be undertaken pursuant to a standard contract.

E. Summary of Liberty Recommendations

Organization, Staffing and Controls

- GS-1. Expand the mission of the GSD to include critical analysis of capacity alternatives.
- GS-2. Provide the GSD with sufficient engineering support.
- GS-3. Improve GSD's performance management system through the incorporation of specific, measurable goals related to reduction and elimination of errors in the handling of data related to management of gas supply.
- GS-4. Develop and implement an employee training program for the GSD.
- GS-5. Develop a succession plan for the GSD.
- GS-6. Develop and implement procedures for conduct and control of the RFP process.
- GS-7. Develop and implement more detailed procedures for procurement of natural gas.
- GS-8. Require annual statements from all employees of the GSD that they have received, read, understand, and are complying with both the corporate Code of Ethics as well as the Code of Conduct related to Affiliate Relations.

Supply Planning

- GS-9. Retain historical forecasting data in a form that will support analysis.

GS-10. Update and revise the data and methods for considering weather in forecasting activities.

GS-11. Consider trends in use per customer in preparing forecasts.

GS-12. Require SJG to demonstrate the cost-effectiveness of the Transco Lateral expansion through the BGSS process.

GS-13. Adopt a programmatic approach to securing and using available information regarding Transco's facilities.

GS-14. Explore displacement alternatives involving neighboring utilities.

GS-15. Address the question of the relationship between the capacity profile and the load duration curve in the next BGSS proceeding.

GS-16. Address the SOLR issue in discussions between SJG and its customers.

Secondary-Market Activities

GS-17. Make several key improvements to SJG's transaction-recording systems.

SOLR Considerations

GS-18. Address alternative means for dealing with the Company's reserve capacity in the second phase of SJG's rate proceedings.

GS-19. Require all firm customers to share in the cost of security of peak-day supply.

GS-20. Establish a mechanism for making marketer assets available to continue serving customers upon market exit or bankruptcy.

Services and Pricing

GS-21. Review tariffs for accuracy and consistency, and correct and streamline them.

GS-22. Develop procedures and ground rules for negotiating flex-rate contracts.

Transportation of Customer-Owned Gas

GS-23. Make SJG assets available to marketers on a pro-rata-share basis; to remarket assets not required by its marketers, SJG should develop a transparent, open-access system whereby it makes its remarketed assets available to all on a competitively neutral basis.

GS-24. Improve the information flow between SJG and marketers.

Commodity Purchases

- GS-25. Provide for a more rigorous examination before committing to additional take-or-release rights.
- GS-26. Encourage more emphasis on price in determining the mix between price and reliability.
- GS-27. Test supplier interest in longer-term contracts.
- GS-28. In light of the mature and liquid gas market, consider scenarios that decrease the RFP quantities somewhat, especially the optioned quantities.
- GS-29. Conduct a structured examination and test of the use of multiple winter RFP issue dates, especially during the summer lulls.
- GS-30. Reduce (or analytically support the appropriateness of) the portion of RFP quantities contracted on a take-or-release basis, considering the take-or-release quantities in the remaining Hess long-term contracts and storage flexibility.
- GS-31. Improve analytical tools and procedures used as part of the RFP process.
- GS-32. Adopt a more analytical approach to spot purchasing.

Hedging

- GS-33. Develop more specific objectives for the SJG hedging program.
- GS-34. Use SJRG's expertise in the conduct of SJG's discretionary hedging program.
- GS-35. Revise the mark-to-market reports to reflect a more comprehensive definition of open positions.

Affiliate Gas Supply Relationships

- GS-36. The parties to the Company's ongoing rate case should address the supplier-of-last-resort (SOLR) issue, and its relationship to the conduct of the Company's secondary-market program.
- GS-37. Provide for more common transaction-tracking methods between SJG and SJRG.

Marketing

- GS-38. Re-evaluate and reformulate marketing goals for interruptible service customers.
- GS-39. Develop a standard approach to marketing plans and provide periodic updates against the plans.

II. Organization, Staffing and Controls

A. General Background

This chapter of Liberty's report of its audit of gas supply at SJG focuses upon efforts made to assure that SJG has marshaled, aligned, and operated resources appropriate to creating and managing a supply of gas for utility needs in a manner reasonably calculated to optimizing the price and reliability objectives that are critical to meeting public service responsibilities. A strong organization, a proficient staff, and effective controls must exist to assure that personnel involved in procurement take all reasonable efforts to identify a full range of suppliers, rank them independently and objectively, negotiate terms and conditions aggressively, and administer the resulting agreements and arrangements soundly. Liberty therefore examined the adequacy of staffing and procedures, as well as how SJG implemented them.

The structure and resources devoted to procurement and portfolio management for a well-managed LDC must reflect the need for utility interests to be of first importance within the utility and at all other entities involved in performing or overseeing relevant activities. There needs to exist a sufficient structure and appropriate resources for assuring that utility procurement and portfolio management are driven by considerations that are independent of the objectives and needs of affiliates who conduct similar activities. This independence requires separate resources or, at the least, strong, independent, constant, and utility-focused oversight of common activities. The direction that comes from senior management should emphasize and examine success in making utility needs of first importance. Incentives from this level down throughout the organization should be matched to utility needs. There should also be routine and meaningful surveillance and monitoring to assure that performance is in the best interest of utility customers.

This chapter addresses the following specific elements of organization, staffing and controls examined by Liberty.

- Organization and Personnel
- Performance Management
- Succession Planning
- Procedures

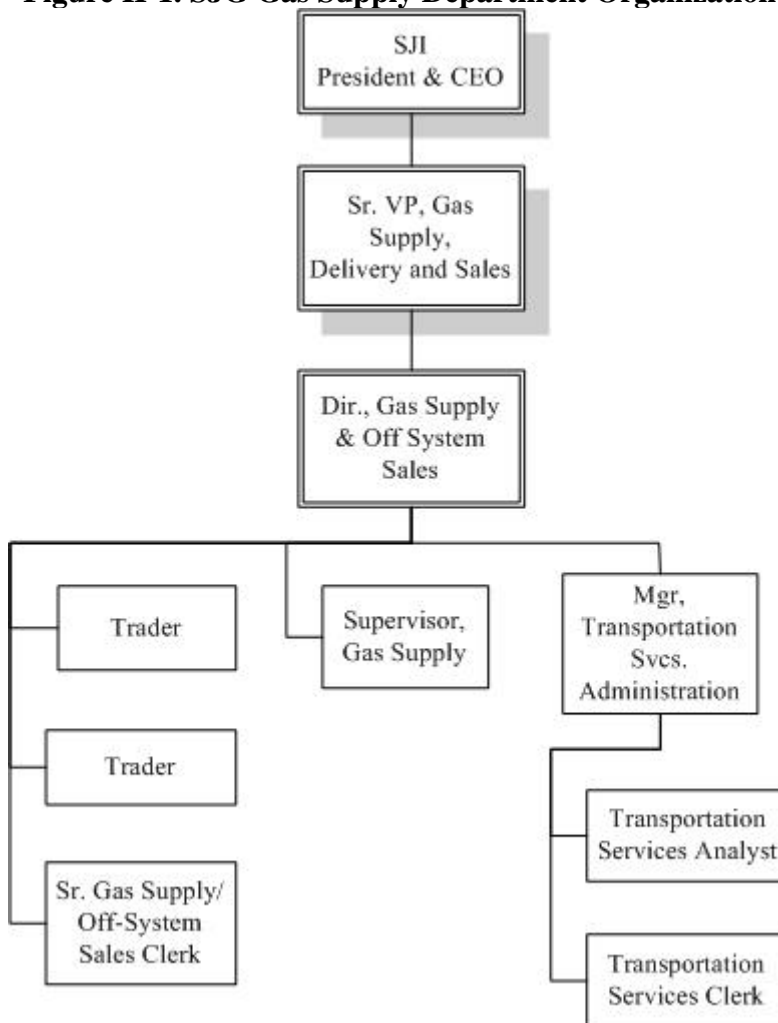
In examining each of these elements of the gas procurement and management operations at SJG, Liberty sought via data requests and interviews to assess the effectiveness of organization, staffing and controls. Liberty also reviewed the processes and procedures within the GSD to ensure that they were appropriate for the intended functions.

B. Organization and Personnel

1. Background

SJG's Gas Supply Department (*GSD*) has responsibility for managing natural gas supply for the utility. The Director, Gas Supply & Off-System Sales manages the department. This director reports directly to SJG's Senior Vice President, Gas Supply, Delivery and Sales. The GSD consists of a staff of eight. The following table shows the department's organization:

Figure II-1. SJG Gas Supply Department Organization



GSD personnel previously worked from the main SJG headquarters facility in Folsom. The department moved to SJG's McKee City facility in June 2004. The GSD also underwent reorganization at that time. Also in June 2004, there was an organizational change in the GSD. The title of the individual responsible for the GSD changed from manager to director and the Manager, Transportation Services Administration and his staff of two began reporting directly to the director.

The GSD has aligned its basic responsibilities for the procurement and management of gas supplies as follows:

Director, Gas Supply & Off System Sales

- Plan, direct and supervise the activities of employees engaged in procuring natural gas and selling gas off-system
- Ensure that adequate gas supplies are available at the best cost, when considering security of supply and operational needs in order to meet customer requirements.

Natural Gas Trader

- Negotiate and administer contracts for short-term gas purchases
- Assist in the long-term gas requirements and gas supply plans
- Negotiate off-system gas sales agreements and arrange efficient transportation of gas supplies to designated sales delivery points
- Identify pipeline and storage capacity that could be released and negotiate and schedule the release of these assets.

Supervisor, Gas Supply

- Perform and monitor the gas supply planning and accounting functions
- Aid in the development of the company's positions on gas supply matters at the state and federal level.

Senior Gas Supply/Off System Sales Clerk

- Complete all administrative, accounting and clerical duties required by the Gas Supply Department and Off System Sales Division
- Assist in secretarial and clerical needs as required.

Four GSD individuals have primary responsibility for procurement activities for SJG. The most senior of them, the Senior Vice President, Gas Supply, Delivery and Sales, has been a member of the GSD since 1993, and has a total of 17 years with SJG. He has had positions of increasing responsibility since joining the GSD. He did not have natural gas experience prior to joining the Company, and his first position related to natural gas was in 1993 as a Gas Analyst. Later in 1993 he was promoted to the position of Manager, Gas Acquisition. In January 1999 he was promoted from the position of Manager, Gas Acquisition & Interstate Sales with SJG into the position of Director, Gas Supply & Off-System Sales with SJG. He held this position until January 2002 when he was promoted to the position of Assistant Vice President, Gas Supply & Off-System Sales. He has a Bachelor's Degree in Industrial Technology.

The Director, Gas Supply & Off-System Sales, a CPA, has been with SJG since 1997. He came to SJG from the public accounting field, and joined the Company as a rate analyst in 1997. His first gas-related responsibilities came in the fall of 1997, when he moved into the position of Supervisor, Interstate Gas Sales. He moved into the position of Manager, Gas Supply in early 2001, and into the current position in June 2004. He has a Bachelor's Degree in Accounting.

One of incumbents holding the position of natural gas trader has been with SJG for 19 years, and has been in the GSD as a trader for the last 5 years. Her first natural gas experience was in the position with Gas Transportation as a Transportation Analyst for three years immediately prior to joining the GSD. The other natural gas trader has been with SJG since 1984. His first natural gas experience started in 1995 when he assumed the position of Gas Control Dispatcher; he held this position until 1999. He became a Supervisor, Gas Supply in late 1999 and moved into his current position in June 2002. He has a Bachelor's Degree in Business. Each of the natural gas traders serves as a backup for the other, as necessary to perform any of the responsibilities of the position of Natural Gas Trader.

Department personnel operate under the guidance of a formalized set of job descriptions that exist for each GSD position. These job descriptions are current, and provide reasonably complete descriptions of the responsibilities of all positions. Personnel in the GSD demonstrated awareness of the contents of the job descriptions.

2. Summary of Audit Activities

In conducting the audit of the Organization and Personnel involved in the gas procurement process, Liberty framed its objectives in terms of the following questions:

- What elements of the organization are responsible for gas procurement matters either directly or through approval authorities?
- What are their responsibilities?
- What defines and communicates these responsibilities?
- What other organization elements interact with gas procurement activities (*e.g.*, corporate planning, corporate purchasing, corporate budgeting, *etc.*)?
- What is the normal process for making and approving key gas supply and procurement decisions? Who is involved and how?
- What are the formal and actual reporting relationships of all persons with significant gas procurement or marketing responsibilities?
- Who performs key gas-related functions?
- What are their training and experience levels?

The criteria that Liberty applied in examining SJG performance related to fulfilling these audit objectives on Organization and Personnel were:

- Clarity of organizational structure.
- Commonality of understanding of roles and responsibilities across all involved elements of the corporate organization.
- Consistency of organization structure with established mission, goals and objectives of gas procurement group.
- Closeness of control over points of contact with other corporate departments involved in or supporting gas procurement activities.
- Usefulness of written descriptions of responsibilities, authorities and contact points to establish clear guidelines for dealing with all routine activities and major predictable transient conditions.
- Comparison of key managers' experience levels with those generally found in the industry in similar positions.

3. Conclusions

a. The mission of the GSD is too narrow.

While the GSD is appropriately structured and staffed for the acquisition and management of natural gas commodity (see discussion below), its ability to assess the utility's need for delivery capacity, and to examine critically the options presented for filling those needs, is quite limited.

b. The skill set within the GSD is too narrow to allow effective evaluation of capacity alternatives.

No one in the GSD has any engineering training or technical background. Thus, capacity analysis by the GSD is limited to receiving estimates of capacity requirements from the Budget Department and surveying capacity providers to identify capacity-addition projects to which the utility might subscribe.

SJG believes that maintaining enough peak-day capacity to accommodate existing and prospective gas users in its service territory is essential to its ability to continue to add customers. In spite of that concern, the GSD maintains no independent ability to assess capacity use and availability. The FERC requires each pipeline to post significant information on its web site about installed capacity at various locations, and about use of that capacity. The GSD does not access that information because none of the GSD staff knows how to use it.

SJG's assessment of its capacity requirements, and of its options for filling those requirements, tend to focus on Transco's Trenton-Woodbury Lateral, as the next chapter of this report addresses in detail. About the only source of information about that lateral that the Company uses, however, is that provided by Transco's marketing representatives. Transco representatives have advised SJG that spare capacity on the Lateral is almost exhausted, and that SJG should sign up for an expansion project. SJG signed a Precedent Agreement for an expansion project in June, 2004. Transco's public statements report that SJG is the only customer for that expansion.

- c. The organization is appropriately structured to accomplish effective procurement and management of natural gas supplies, but not capacity.**
- d. The responsibilities for the various positions within the GSD are clear and appropriate for an organization responsible for procurement and management of natural gas supplies, but not capacity.**
- e. Personnel in the GSD have appropriate experience and qualifications necessary for proper procurement and management of natural gas supplies, but not capacity.**

4. Recommendations

1. Expand the mission of the GSD to include critical analysis of capacity alternatives.

Because the mission of the GSD is so narrow, the Company's analysis of capacity alternatives is not sufficient. The GSD's inquiries into its capacity options are basically limited to calling the pipelines and asking them what capacity options are available.

In Liberty's experience a more typical gas-supply department would be actively involved in analyzing the delivery-capacity needs of the customers on its system, and working with project developers (including system planners for the utility itself) to configure capacity projects to fit the company's needs. Liberty found no evidence of any such analysis at SJG's GSD. The group's GSD personnel do not appear to consider capacity analysis to form part of their mission.

It is not sound for GSD to accept a passive role in developing capacity options and controlling capacity costs. The Company must empower the GSD, and provide it with sufficient resources, to enable it to take a more pro-active role in managing its capacity resources and costs.

2. Provide the GSD with sufficient engineering support.

In line with the recommendation for expanding the GSD's mission, Liberty recommends that the GSD be provided with additional staff resources to enable it to fulfill that expanded mission. Those additional resources would preferably consist primarily of a full-time position for a pipeline engineer. A second choice would be dedicated support from the Company's engineering group.

C. Performance Management

1. Background

The GSD uses an ongoing performance management system to direct and evaluate personnel performance. Job descriptions provide the general framework for personnel evaluations. A joint meeting between the individual and the immediate supervisor generates specific goals and objectives for each individual at the beginning of each annual evaluation period. These goals and objectives address corporate as well as departmental targets; they also include specific developmental targets for each individual. For example, a typical corporate objective could relate to the dollar volume of off-system sales to be achieved.

The Senior Vice President, Gas Supply reviews these goals and objectives at the beginning of the evaluation period, in order to assure their consistency with corporate targets. The Senior Vice President also participates in end-of-period performance evaluations for each GSD employee. The Senior Vice President has indicated that the performance management system will require tighter controls in order to comply with the requirements of the Sarbanes-Oxley Act of 2002. Currently, however, no department goals or objectives relate to reduction or elimination of errors in data management concerning gas supply.

A formal GSD training program does not exist. Personnel currently in the department have learned the responsibilities of their positions by observation of how others perform their jobs, and by one-on-one mentoring sessions and other interaction with other department members who have been in the job for a longer period of time. This approach has made on-the-job training the primary GSD learning tool. Typically, personnel in the department have started at lower level positions, and have worked their way up to positions of higher responsibility.

2. Summary of Audit Activities

In examining performance management in the organization involved in the gas procurement process, Liberty framed its objectives in terms of the following questions:

- How is employee performance measured?
- Are reward systems integrated with performance measurement systems?
- How is personnel budgeting performed?
- What staff training programs have recently been offered and are currently planned?
- What written documentation (job descriptions) describe personnel responsibilities?
- Are these documents understood by employees?
- Are these documents used as part of the performance management process?
- Are these documents up to date?

- Is there any relationship between training programs and personnel job descriptions?

The criteria that Liberty applied in examining SJG performance related to fulfilling these audit objectives on Performance Management were:

- Consistency of job descriptions with incumbent skills.
- Quality of performance as identified under internal measurement systems.
- Consistency of reward system application with performance evaluation system.
- Whether job descriptions are current, and relevant to current responsibilities of position.
- Whether training program exists and is comparable to relevant programs in the industry.
- Whether training program acknowledges the small size of the GSD and incorporates elements of succession planning.
- Whether performance management objectives are appropriately tied to accomplishment of training goals.
- Whether performance management system is appropriately related to job descriptions.

3. Conclusions

- a. Job descriptions for positions within the GSD are up to date and adequately describe the responsibilities of the positions for which they are written.**

Personnel in the GSD were aware of the contents of the job descriptions and indicated that these job descriptions were used as part of the overall performance management and personnel evaluation process.

- b. The GSD has a reasonable performance management system, but it should be improved.**

The performance management system could be used to more effectively support controls. Currently, there exist no goals or objectives in the personnel evaluation system that relate to reduction or elimination of errors in data management related to gas supply.

- c. The lack of a formal GSD training program exposes the department to undue risks of performance continuity.**

4. Recommendations

- 3. Improve GSD's performance management system through the incorporation of specific, measurable goals related to reduction and elimination of errors in the handling of data related to management of gas supply.**

Tighter management controls will be required in the future to comply with the requirements of Sarbanes-Oxley, and the performance management system can be used to more effectively support these controls. Incorporation of specific and measurable goals related to reduction and/or elimination of errors in the handling of data related to management of gas supply will be an effective way to motivate employee performance in this area, and to monitor progress in tightening management controls.

- 4. Develop and implement an employee training program for the GSD.**

GSD needs to develop and implement a formal and documented training program for its employees. Training is especially important in an organization that has responsibility for such large dollar transactions and that has so few employees responsible for these transactions. The value of a documented program lies in the guidance it provides to employees, and in the structure it provides to management for direction of the training program, for evaluation of both the program and the individuals responsible for its implementation. Accordingly, the performance management system of the department must incorporate goals tied to the training program.

The structure of the training program must address the specific requirements of each of the positions within the GSD, as well as more general operational attributes of the GSD organization and mission. Included in the training program must be recognition that the staff is small, and therefore specific provision must be made for assignment of backup responsibility, and training in these backup responsibilities. The training program must specify the resources required for accomplishment of successful training, how the success of training is to be measured, and the mix of both internal and external resources necessary to accomplish the training. Finally, the training program must be integrated with the succession plan discussed in the following recommendation.

D. Succession Planning

1. Background

GSD has an appropriate size for carrying out the gas procurement and management responsibilities of the department on a current basis. Its size, however, remains small, and the Department would find itself materially impaired by the sudden departure of any of the four incumbents (*i.e.*, the senior vice president, the director and the two traders) responsible for gas procurement. No document formally describes the succession plan for the department. The senior vice president did report to Liberty, however, that the topic of succession planning has frequently arisen at senior SJG management meetings. SJG leadership has urged each vice president to think about this subject. His consideration of such planning has led the senior vice president to a number of ideas about cross-training that could help to provide a source of backup to the staff of the GSD. He has not reduced his current thinking to a written plan, but his considerations include the following:

- The current senior gas supply/off-system sales clerk is a good candidate for training in the area of gas scheduling
- The Manager, Transportation Services Administration has plans to upgrade the clerical position in the group, in order to give the manager more time to learn gas supply procurement functions
- Management has recently approved the creation of a new GSD position (an analyst to work in the planning function in Gas Supply), but a job opening has not yet been posted
- The long history of the current supervisor, gas supply in the GSD would allow him to assist in gas procurement activities, if needed.

2. Summary of Audit Activities

In conducting the audit of Succession Planning in the organization involved in the gas procurement process, Liberty framed its objectives in terms of the following questions:

- What succession planning takes place in gas procurement-related areas?
- How is succession planning tied to the performance management system?
- How is succession planning tied to the training program?

The criteria that Liberty applied in examining SJG performance related to fulfilling these audit objectives on Succession Planning were:

- Consistency of succession planning with the needs of the organization
- Comparison of quality of the succession plan with similar plans found in the industry
- Consistency of the succession plan with both the performance management system and the training program.

3. Conclusions

- a. The GSD has not sufficiently addressed the limits of its small size through effective succession planning.**

Succession planning is critical for an organization as small as the GSD, and with the magnitude of responsibility assigned to it. While the need for succession planning has been recognized by management, and the subject discussed, no formalized succession planning programs have been developed or implemented.

4. Recommendations

5. Develop a succession plan for the GSD.

Liberty recognizes that succession planning is a current topic of discussion within the ranks of senior management at SJG. However, these discussions must be translated into a documented plan for the GSD. Succession planning is critically important for an organization responsible for such large dollar transactions and that has so few employees responsible for these transactions. Effective succession planning takes time, and since the sudden departure of key employees can never be predicted with any certainty, the plan must be developed as soon as possible. The value of a documented succession plan lies in the guidance it provides to employees, and to the structure it provides to management for direction of the plan, and for evaluation of both the plan and the individuals responsible for its implementation. Accordingly, the performance management system of the department must incorporate goals tied to the development and maintenance of the succession plan. A key component of a succession plan is training, and therefore the training program discussed in the previous recommendation, and the succession plan must be integrated.

E. Procedures

1. Background

The GSD has formalized and documented procedures for the majority of activities related to gas procurement. Established procedures address the following activity areas:

- Risk Management Policy and Procedures
- Natural Gas Procurement Policy
- Off-System Sales Procedures.

The risk management policy and procedures documentation (*RMP*) provides for a comprehensive treatment of risk management. Chapter IV.C. of this report addresses their substance and merits in more detail. The subjects covered by the RMP include:

- Introduction
- Policy and Procedures
 - Policy
 - Procedures (includes definition and responsibilities of the Risk Management Committee - *RMC*)
 - Essential Elements of South Jersey's RMP.
 - Overview of South Jersey's Applicable Business Activities
 - Risk Management Methodologies
 - Risk Control
 - Violations of RMC Guidelines, Limit Violations and Trader Misconduct
- Commodity Purchasing Guidelines
- Authorizations, Limits and Controls (Appendix A).

Appendix A to the RMP contains a decision (or authority) matrix. This matrix defines the limits of responsibility and decision-making authority for each of the positions related to and responsible for procurement of natural gas. Liberty found that these limits were well understood, and followed, by members of the GSD.

The *Natural Gas Procurement Policy* consists of a three-page document outlining the overall policy of SJG. As defined in this document, the policy of SJG is:

to analyze its requirements for natural gas on an annual, seasonal, monthly and daily basis. Firm gas supplies are acquired in these time frames on a "best value available" basis.

Best Value considerations include, but are not limited to price, security of supply, diversity of supply, availability, and counterparty credit risk. The document outlines the general procedural steps involved in procurement of gas, and refers to the RMP for more specific guidelines related to hedging and portfolio makeup. These baseline procedures for procurement of gas contain substantially less detail than do the procedures for off-system sales.

The three-page policy statement refers to the use of the RFP process for procurement of gas, but includes no specific procedures detailing the elements and controls of the RFP process. Early in this audit period SJG placed heavy reliance on long-term commodity contracts that also contained very high levels of quantity flexibility. The company began to face the loss of significant volume entitlements with the expiration of some of those long-term contracts. SJG's response, in 2001, included the institution of a 'winter RFP' process for securing large portions of the gas volumes needed during the peak season of November through March. Gas procured through these RFPs therefore began to offset a meaningful portion of the gas-volume entitlements lost as the older, long-term contracts executed soon after the FERC's Order 636 began to expire. SJG preceded the first 'winter RFP' with one for a summer fill extending from April, 2001 through March, 2002. SJG now uses RFPs primarily to procure gas for the winter

heating season. Chapter IV.B. of this report addresses certain details of the agreements resulting from the use of these RFPs.

Authority for procurement is found in the attachment to the *Risk Management Procedures*. Personnel in the GSD understood the authority limits specified in these procedures, and confirmed that the director of the department had authority for all routine gas procurement activities throughout the year. This authority includes daily and seasonal gas procurement, and any gas obtained through the RFP process. The only instances where the director need go higher in the organization for procurement approval is for contracts whose duration exceeds two years, or when the contract is at variance with GISB standards.

The vice president indicated that he was aware of the procurement activities conducted by the department through normal reporting processes, but that he did not authorize, and was not required to authorize routine gas procurement throughout the year.

The vice president is required to, and does, approve all invoices related to gas procurement. The senior gas supply/off-system sales clerk first checks invoices to confirm that SJG received the gas indicated on the invoice, and that the prices agree with information from the *Spot Sheet* that contains ongoing gas pricing information. The supervisor, gas supply then checks and signs the invoice. The GSD director then does the same, and sends the invoice to the vice president for final approval. Discrepancies on invoices are infrequent, but when they occur, the gas traders get involved in resolution. Corrected invoices require the same approval as normal invoices.

SJG's off-system sales procedures define the policy for releasing pipeline capacity or making bundled sales to third parties from the utility portfolio of gas supply assets, in order to maximize ratepayer value by making economical use of assets not expected to be needed for on-system use at all times. The assets include pipeline capacity, storage capacity, commodity, and supply contracts. The procedures address this policy generally, and adequately define the objectives, steps, responsibilities and controls related to off-system sales. Succeeding chapters of this report discuss capacity releases and off-system sales in more detail.

Liberty also examined SJG's policies and procedures establishing a code of conduct for GSD employees and operations. Such guidance for employees of SJI generally exists and has a number of sources. Overall, the *Human Resources Policy and Procedures* document contains a section (Number E21.1) establishing and detailing a code of ethics for all employees. This seven-page document provides adequate guidance to employees. Liberty found it typical of similar documents observed at other utilities.

Another document, the *South Jersey Gas Company Compliance Plan – Affiliate Relations, Fair Competition and Accounting Standards and Related Reporting Requirements*, contains guidelines specifically related to dealings with affiliates. A separate Liberty report addresses compliance with those standards. The RMP also contains a number of provisions addressing employee conduct. These provisions pertain to risk control, however, and do not address the overall issue of ethical behavior of employees. The RMP describes controls that must be in place to minimize personnel risk and it includes a statement that:

each employee and outside trading agent is required to sign an annual compliance statement indicating that they have read, understood, and complied with the RMC's guidelines and procedures.

The employees that Liberty interviewed indicated that procedures for ethical conduct have been discussed at staff meetings, and that they have received some ethics training in Folsom in the past. The most recent ethics training was held in 2004 and consisted of a 20 minute slide show presentation, issuance to each attendee of a copy of the Code of Ethics Procedure (E21.1), the Board of Directors Code of Ethics, the Audit Committee Complaint Handling Policy and Procedures, and the Financial Code of Ethics. Employees interviewed by Liberty did not recall signing statements on any recurring basis indicating that they had received, read, understood and were complying with applicable ethics provisions. Other than the requirements contained in the RMP, there exists no requirement that employees annually or otherwise sign any form containing such acknowledgements. Members of the department did indicate that they had signed such a form when they initially received code-of-conduct guidelines.

The procedures that govern dealings with affiliates contain very specific guidance. Further, the director indicated that the GSD's uniform practice is not to conduct transactions between SJG and affiliates under the RFP process. He did indicate, however, that day-to-day transactions are conducted with affiliates. SJG and the affiliate (*SJRG*) price these day-to-day transactions at *Gas Daily* prices. The director indicated that SJG acts diligently in documenting that these transactions take place at arms-length.

Members of the GSD indicated that, in the day-to-day transactions that could include dealings with affiliates, they are very careful to ensure that these dealings show no preferential treatment for the affiliate, and that any transaction with an affiliate can be demonstrated to be one conducted at arms-length. Department procedures are clear in this respect.

2. Summary of Audit Activities

In conducting the audit of procedures utilized by the organization involved in the gas procurement process, Liberty framed its objectives in terms of the following questions:

- What policies and practices control gas procurement-related activities?
- How well are they understood?
- Are they consistently applied?
- Are they regularly reviewed and updated?
- What major tools (*e.g.*, vendor lists, market surveying, computer systems) are used to carry out gas procurement activities?

The criteria that Liberty applied in examining SJG performance related to fulfilling these audit objectives on procedures were:

- Consistency of gas procurement policies and procedures with work requirements and gas procurement objectives.
- Clarity and thoroughness of policies and procedures.
- Adequacy of tools to support timely and efficient accomplishment of gas procurement activities.

- Personnel awareness of procedures and compliance with them.
- Whether policies and procedures are current.
- Comparison of policies and procedures with those typically found in the industry for similar activities.

3. Conclusions

a. GSD does not have sufficient procedures to detail the use of its RFP process.

The GSD has a number of appropriate procedures, but none exist for the RFP process. There exist a number of flaws in the current method for handling the RFP process. Incoming bids may be received in any manner from sealed envelopes to fax. Bids are opened as they arrive, which could be from hours to days before the actual bid deadline, and the contents may be viewed by anyone interested in such contents. There are no specific controls on maintaining the integrity of bid data to ensure that it remains confidential, and that the correct data has actually been entered into the evaluation spread-sheet or computer evaluation model. Some cross-checking of this data is conducted within GSD, but it is random, and there are no requirements for regular cross-checking. Access to bid data entered into the computer is controlled, but there are no cross-checks to ensure that the integrity of this data is maintained.

Detailed RFP procedures are important for a number of reasons, and would correct the deficiencies noted directly above.

- Detailed procedures provide an important platform for training of employees.
- Detailed procedures provide a frame of reference for management direction of activities and evaluation of employee performance.
- RFP procedures provide an important control of confidential information submitted in response to solicitations for supply of natural gas.

SJG needs to address a number of procedural aspects. First, incoming bids must be kept under lock and key, they must not be opened until the official time of bid opening, and they must only be opened in the presence of specified individuals. If bids are not secured in these ways, there is the potential for someone to look at the contents of the bid prior to the bid receipt deadline and inform another company that has not yet bid of the pricing, terms, and conditions necessary to submit a winning bid. Second, cross-checks must be incorporated to ensure that actual bid data from incoming bids is accurately entered into the bid evaluation spread-sheets and computer evaluation models. Frequency of cross-checking must be specified, and typically independence in the process results from using separate persons to enter data and then to perform the bid evaluations. Incorrect data entry could be accidental or deliberate. Third, controls must be established to ensure that only specified individuals can change bid data once entered into spread-sheets or models, and that there are cross-checks on such changes.

The absence of specific procedures for control of the RFP process within the GSD is particularly troubling in view of the requirements for compliance with the standards established by N.J.A.C. 14:4-5.3 through 5.5 as related to communication, nondiscrimination and sharing of proprietary information. SJG has assured compliance with these standards in its response to a Liberty data request, which provided the *South Jersey Gas Company Compliance Plan – Affiliate Relations*,

Fair Competition and Accounting Standards and Related Reporting Requirements. Specific notations within the plan response indicated that SJG had the appropriate procedures in place to prevent the sharing of proprietary information between SJG and affiliates, for example. Yet the absence of the subject procedures for the RFP process indicates that SJG does not have the appropriate procedures in place.

b. The GSD Procurement Procedures contain insufficient detail to support effective operation.

The GSD procedures for procurement of natural gas reside in the *Natural Gas Procurement Policy*. This three-page document outlines the overall policy of SJG. The document outlines the general procedural steps involved in procurement of gas, and then refers to the RMP for more specific guidelines related to hedging and portfolio makeup. However, neither of these documents contains the necessary detail to actually procure natural gas. It is also important to note that these procedures for procurement of gas are substantially less detailed than are the procedures for off-system sales. This disparity raises concern, given that natural gas procurement represents so much larger a level of commitment than do off-system sales.

The following concepts are missing from the natural gas procurement procedures:

- Clear differentiation in the document (through utilization of titles or headers) between the procedures for annual, seasonal, monthly and daily procurement.
- Utilization of step-by-step process descriptions instead of narrative descriptions.
- Definitions of the categories of procurement – annual, seasonal, monthly and daily.
- Description of what gas is procured on an annual basis. Currently the only processes outlined are those for seasonal, monthly and daily activities.
- Clear specification of the relationship between procurement procedures and risk management procedures and the important points where the procedures must tie together.
- Description of any iterations required, or conducted as GSD personnel begin the process of reviewing original procurement quantities obtained from budget information.
- Specific designation of individual position responsibilities for steps in the procurement process.
- Methods for maintaining a list of qualified bidders, and requirements for getting on this list.
- Definition of the process required to ensure that there are appropriate procedures in place to identify and limit sending of solicitations to only risk/credit-qualified suppliers.
- Clarification of the meaning of existing language that states “a variety of suppliers are surveyed for supply availability”, and what the term “variety” actually means, in terms of supplier size, location, history of performance, etc.
- Tools and techniques to be utilized in bid evaluation process, along with expanded guidance on how to interpret the “best value” criterion, and requirements for documentation as to how this “best value” criterion has been met.
- Points of approval in the decision-making process, and requirements for approval.
- Sources of information used in daily procurement process including weather data and storage levels.

- Designation of specific responsibility for communication with suppliers, maintenance of data bases, checking of invoices, preparation of reports, and internal communications, including required internal distribution lists.
- Specific requirements related to controls, including but not limited to recording of phone conversations, reconciliations, and required records.

c. Ethics procedures are not complete.

Employees of the GSD were generally aware of the requirements for proper ethical conduct, but there was uncertainty about the applicable guidance documents that exist and the requirements related to understanding them and certifying that they are complying with them.

4. Recommendations

6. Develop and implement procedures for conduct and control of the RFP process.

Solid procedures for assuring the integrity of the RFP process are very important. These procedures must be carefully written, followed continually, and reviewed with employees of GSD on a regular basis.

Integrity of the bidding process is a significant issue when procurement of natural gas supplies involves such large expenditures. Typical utility procedures for the RFP process go into considerable detail to ensure such integrity. For example, utility fuel procurement procedures should ensure that there is no opportunity for someone within the utility to learn of the contents of bids before other bidders have submitted bids, and then make a phone call to a supplier that has not yet submitted its bid and tell it what is needed to win the business. RFP procedures should also pay considerable attention to the integrity of data to ensure that data cannot be changed by someone in the utility in order to favor a supplier. (Liberty emphasizes that, during its examination of processes and procedures within the GSD, no evidence was found indicating that inappropriate bidding actions had occurred or are occurring.)

Thus, typical gas procurement RFP procedures contain the following provisions related to integrity of the process:

- Incoming bids are time and date stamped to ensure that they have arrived prior to the official deadline for bid submission
- Instructions for handling late bids, and whether they are to be accepted or rejected
- Bids are kept under lock and key from the time of arrival until the official time of bid opening
- Bids are not to be opened by anyone other than the bid opening committee until the official time of bid opening
- Bids are to be opened by a designated team of individuals, or committee, in the GSD (not just one person), and also attended by a representative from internal auditing to ensure propriety of the process
- One of the attendees at the bid opening is assigned the responsibility of entering the actual bid data into an official bid spreadsheet
- Everyone attending the bid opening is required to sign the bid data spreadsheet to confirm the validity of the information

- If data from the bid data spreadsheet is later entered into a computer data base, then additional security steps have to be specified to ensure integrity of bid data
- Later, another individual, cross-checks original bid information with this spread sheet to ensure that the data entry has been correct
- Only certain persons are entitled access to the bid data spreadsheet
- Only certain persons are entitled to change information on the bid data spreadsheet
- Specification of the position responsible for evaluation of the bids
- Specification of the position responsible for cross-checks of the bid evaluation to ensure that data corresponds to the original bid data.

7. Develop and implement more detailed procedures for procurement of natural gas.

The existing procedures for procurement of natural gas do not provide the necessary detail. These existing procedures provide an adequate overview of the goals and objectives for procurement, but fall short of providing guidance to employees in the actual responsibilities and steps required in procurement. The existing procedures are in narrative form, and should be converted to the more typical procedural format of clear and concise sequential steps. Detailed procedures are especially important in view of the fact that the department is so small, that training programs within GSD do not exist, and that there is no documented succession plan.

The plan developed must be of sufficient detail to serve as a format for employee training. A number of other important points must be addressed in these procedures, and should include, but not be limited to the following: identification of responsibilities, sources of information, internal organizational contact points, external vendor contact points, flows of information, actual sequential procedural steps, record-keeping requirements, timing of actions, maintenance of data integrity, approval authorities, and reporting requirements.

8. Require annual statements from all employees of the GSD that they have received, read, understand, and are complying with both the corporate Code of Ethics as well as the Code of Conduct related to Affiliate Relations.

In order to ensure that all employees of the GSD are aware of the requirements and of the comprehensiveness of the various ethics procedures, all employees should be required to sign annual statements acknowledging that they have received their own copy of the procedures, that they have read them, that they understand them, and that they are complying with the procedures. The specific procedures of concern are those published by the Human Resources Department and contained in document E21.1 entitled "Code of Ethics" and the "South Jersey Gas Company Compliance Plan – Affiliate Relations, Fair Competition and Accounting Standards and Related Reporting Requirements," as contained in N.J.A.C. 14:4-5.3 through 5.5.

Compliance with these procedures is particularly important for employees of the GSD, who by the nature of their responsibilities, are involved in procurement involving millions of dollars each year. Their conduct must be beyond reproach, and corporate management must assure itself that every reasonable precaution has been taken to ensue that the ethical conduct of these employees is of the highest nature.

III. Supply Planning

A. General Background

Gas supply planning encompasses all activities necessary to forecast gas supply needs, and to develop a portfolio necessary to meet those needs at the city gate as economically as possible, with proper consideration for reliability. Gas supply planning comprises two main activities: load forecasting and capacity planning. Forecasting addresses the demand side and capacity planning addressing the supply side of the supply process. These activities further break down into the following categories, which constitute the elements examined by Liberty, and discussed in this chapter:

- Load Forecasting
 - Design day forecast
 - Annual demand forecast
- Capacity Planning
 - Gas supply resources
 - Pipeline capacity
 - Storage capacity
 - Peaking capacity.

The audit period incorporates eight years, from October 1, 1996 through September 30, 2004, during which SJG has continued to use relatively similar forecasting and gas supply planning methodology. SJG performs its gas control and gas supply planning at its McKee City office. The Financial Planning group performs demand forecasting at SJG's headquarters in Folsom, NJ.

Every year, the Financial Planning (FP) group prepares a 10-year forecast of requirements for supply by rate class. This forecast includes transportation-service customers who buy their gas from suppliers other than the utility. Financial Planning also prepares, again by rate class, a very-detailed (month-by-month) forecast of requirements for supply for the next year.

The Gas Supply Department (GSD) uses FP's long-term forecast for evaluating the Company's supply-capacity portfolio. Starting with FP's forecasts (peak-day and annual) for normal and design weather, GSD analyzes the performance of the Company's supply-capacity portfolio over the forecast horizon using an optimization model. GSD uses Sendout from New Energy Associates. Identified deficiencies in the capacity portfolio become the point of departure for analyzing proposed supply-capacity projects.

Commodity purchasing starts with FP's detailed forecast of requirements for the next year. Seasonal, monthly and daily *Game Plans* guide commodity purchasing over the relevant time frames.

SJG stores most of its information about nominations, off-system sales transactions, and daily game plans in paper format. The Company maintains electronic versions of gas-supply information for only the most recent two years.

B. Load Forecasting

Liberty's examination began with an assessment of the adequacy of the methods employed to forecast load. A significant portion of the load for LDCs, and especially the load related to residential customer classes, demonstrates strong correlation with weather. The use of appropriate weather data is therefore critical in determining the forecasted level of demand for different weather scenarios. LDCs typically assess base budgets on what is termed *normal weather*. This term is defined by an average of historically observed heating degree-days (*HDDs*) over a number of years or of those recorded by an independent authority such as the National Oceanic and Atmospheric Administration (*NOAA*).

LDCs factor weather into their forecast in many ways. HDDs and wind speed comprise the most widely used weather elements by forecasters. Liberty considers weather analysis to be a very important component of LDC natural gas forecasting, as it is important to the determination of both peak-day and annual sendout. Therefore, a sound weather analysis is the starting point for determining the level and nature of supply resources.

1. Summary of Audit Activities

Liberty began its assessment of SJG's load forecasting procedures by reviewing key documents and copies of written procedures collected by GSD into a book entitled *Overview Documents*. Liberty also conducted interviews with the following individuals:

- Vice President of Gas Supply/Delivery and Sales
- Supervisor of Financial Planning and Forecasting
- Director of Gas Supply and Off System Sales
- Supervisor, Gas Supply
- Natural Gas Traders
- Supervisor, Allocations and Communications.

Liberty also submitted follow-up data requests.

Liberty's evaluation of the load forecasting process involved examining the weather data analysis and assumptions that SJG used, the main components (number of customers and use per customer) of the forecast, the methods used for forecasting these components, consideration of weather and other sensitivity analysis, and separate evaluation of firm vs. non-firm demand.

2. Findings

Weather Analysis

SJG prepares a 10-year demand forecast of gas requirements and capacity entitlements based on assumed normal and design weather data. The documentation supporting that forecast includes information about weather normals, design-day assumptions, and demand forecasts for various sales requirements scenarios.

SJG uses four weather stations for gas supply planning. They are located at four of the Company's divisional offices: in Pleasantville, NJ (Atlantic County), Glassboro, NJ (Gloucester County), Millville, NJ (Cumberland County), and Swanton, NJ (Cape May County).

SJG calculates normal weather from the average of the twenty-year period ended June 30, 1996. SJG considers normal and design weather to include, respectively, 4,748 and 5,358 heating degree-days. A heating degree-day is a measure relating temperature to the demand for heating fuel. Heating degree-days for a particular day is determined by taking the arithmetic average of the day's high and low temperatures. If the resulting number is above 65, there are no heating degree-days for that day. If the number is less than 65, then the resulting number is subtracted from 65 to find the number of heating degree-days. For example, if the day's high temperature is 60 and the low is 40, the average temperature is 50 degrees; 65 minus 50 equates to 15 heating degree-days.

Liberty's recalculations from weather data provided by SJG yielded 4,709 annual HDDs as the average for the four weather stations over the 20 years of data provided. Liberty observed that the highest annual HDD level of 5,208 occurred in 1978. Changing from a calendar to SJG's gas year for planning purposes (October – September) did not change this amount significantly. The highest level of HDDs for a gas year, 5,282, was for the October 1980 to September 1981 period. SJG did not provide any additional contiguous weather data for dates beyond July 1, 1996. SJG provided daily weather data from January 2, 2002 through October 21, 2004. Liberty did not use this weather data in its annual HDD distribution weather analysis, because there was not enough of it.

Liberty constructed the following monthly heating degree-day (HDD) table from the data provided.

Table III-1. Monthly HDDs

Month:													1977-1995	1976-1994
	1	2	3	4	5	6	7	8	9	10	11	12	Jan-Dec	Oct-Sep
Std. Dev.	148	132	90	54	51	13	1	5	24	81	93	145	377	391
Min	707	596	514	270	68	0	0	0	20	141	367	622	3576	3855
-2 std	703	584	498	266	41	0	0	0	1	116	335	559	3954	3944
Avg	999	848	677	375	143	15	0	2	49	277	521	848	4709	4727
+2 std	1295	1112	857	483	246	42	3	12	97	438	707	1137	5464	5509
Max	1281	1149	816	444	237	40	5	22	99	426	757	1174	5208	5282

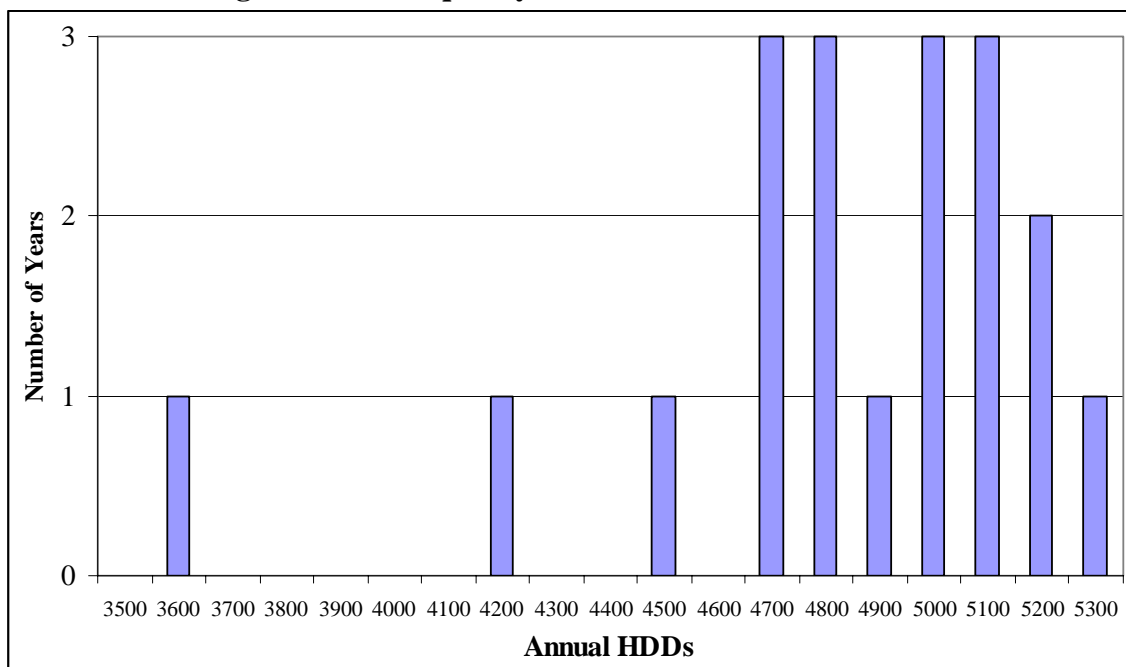
Columns 1 through 12 in the table indicate the standard deviation, minimum, average, and maximum monthly HDDs, and the +/- 2 standard deviation bounds around the average for each calendar month. The last column (October – September) indicates the variation in annual HDD for the gas year (not the summation of the associated row). Liberty summed the annual HDD for the 20 years and then divided by 20 to determine the annual average number.

If weather were normally distributed (which it is not), statistical theory says that the values shown in the rows between the minimum and the maximum should be ordered, with the minimum and maximum very close to the +/- 2 standard deviation figures. This range would correspond to a 95-percent-probability band on the distribution. With about 50 years of available data, a temperature extreme with a probability of 2.5 percent on either side of the distribution would correspond to 50 years times 2.5 percent-per-year probability, or about one occurrence in 50 years.

Liberty's calculations suggest that the annual standard deviation is high enough (*i.e.*, the average plus 2 standard deviations is sometimes higher than the maximum value observed) to warrant planning for an annual degree-day level that is higher than the maximum observed during those 20 years.

The figure below presents a frequency distribution of annual HDDs for the 20 years of weather data provided. The distribution does not look like a normal one and the low and high extremes are separated from most of the rest of the data. Thus, it is likely that a probability distribution for weather in SJG's service territory is not a normal one.

Figure III-2. Frequency Distribution of Annual HDDs



Assuming weather temperature follows a continuous distribution with an infinite range, there is always a probability that a new observation, *i.e.*, total annual temperature -- HDDs -- will fall above or below what has been historically observed. A Monte Carlo weather simulation can be used to generate a distribution representative of the full distribution, including the unobserved "tails" -- extreme warm- or cold-weather years --that would be ignored by basing decisions on historical observations alone. Monte Carlo simulation thus allows modeling of the extremes of the distribution. The probability of experiencing extremely cold weather, for example, with temperatures that had not been previously observed, would be of particular interest.

Monte Carlo analysis tends to be complex and expensive. Most utilities therefore rely therefore on weather history and extreme weather actually observed. History and observations are commonly used in planning for both for peak day and annual sendout. To the extent that analysis and planning relies upon historical data and ignores extremes that can be modeled in a Monte Carlo simulation, utilities tend to plan for extremes in less rigorous ways.

In today's gas market, LDCs generally have supply alternatives short of curtailing firm customers, even under the most extreme weather conditions. If it is willing to pay enough, an LDC can supplement the pipeline supply, storage, peaking plants, and interruptible contracts of its committed supply portfolio with spot gas or purchases of gas from marketers or customers. That availability would be a function of the number of pipelines serving the utility's territory, location on the pipelines, number and types of large customers, number of marketers serving in the region, and perhaps other parameters. An LDC operating in a market that has more of these options available to it may tend to limit assets acquired in advance to those sufficient to meet historical peaks. Conversely, an LDC like SJG, with principal dependence on Transco and Columbia, should plan intensively in order to get the most value out of the resources that it has available.

Liberty used the 20 years of weather data from 1976 to 1996 provided by SJG to determine that the average weather degree-day data for SJG's four weather stations contains 19 days where the weather was 10 degrees or more below average, and 43 days where it was 15 degrees or more below average. January 17, 1982, the coldest day in the data set, experienced an average daily temperature of 0 degrees (65 HDDs). The next coldest days, January 19, 1994 and January 20, 1985 each had 62 HDDs, and the next coldest day, February 17, 1979, 60 HDDs. The following table shows the 43 coldest days.

Table III-3. Coldest Days in SJG Service Territory
(1976-1996)

Date	HDDs	Avg. Temp	Date	HDDs	Avg. Temp
1/17/1982	65	0	1/4/2008	54	11
1/19/1994	62	3	2/14/1979	54	12
1/20/1985	62	3	2/18/1979	53	12
2/17/1979	60	5	2/5/1996	53	12
1/17/1977	59	6	1/16/1977	53	12
12/25/1980	59	6	1/11/1982	53	12
1/10/1982	58	7	1/3/1979	53	12
2/11/1979	58	7	2/12/1979	53	12
1/21/1985	58	7	2/16/1979	53	12
12/30/1980	58	8	5/2/1981	53	13
1/12/1981	57	8	1/14/1988	52	13
2/13/1979	57	8	12/24/1983	52	13
1/18/1994	57	8	1/16/1994	52	13
1/21/1984	57	8	12/22/1989	52	13
1/15/1994	56	9	1/8/1981	52	13
1/20/1994	56	9	5/1/1981	52	14
2/4/1996	55	10	1/18/1982	51	14
12/25/1983	55	10	2/5/1995	51	15

1/18/1977	55	10	1/28/1986	50	15
2/10/1979	54	11	1/27/1987	50	15
1/11/1981	54	11	2/29/1980	50	15
2/9/1979	54	11			

These observations can be used to assess probabilities of occurrence, by dividing the number of coldest days by the number of years in the data set. The following table shows the resulting probability that an extremely cold day will occur within a given year.

Table III-4. Probability of Extreme Cold in SJG Service Territory
(1976-1996 data)

SJG Service Territory - Coldest Days Analysis		
Data days	7,291 (out of 7,305 days)	
Data years	20	
	Count	Prob/Year
Days >=65 HDDs	1	5%
Days >=64HDDs	1	5%
Days >=63 HDDs	1	5%
Days >=62 HDDs	3	15%
Days >=61 HDDs	3	15%
Days >=60 HDDs	4	20%
Days >=59 HDDs	6	30%
Days >=58 HDDs	10	50%
Days >=57 HDDs	14	70%
Days >=56 HDDs	16	80%
Days >=55 HDDs	19	95%
Days >=54 HDDs	24	100%
Days >=53 HDDs	32	100%
Days >=32 HDDs	38	100%
Days >=51 HDDs	40	100%
Days >=50 HDDs	43	100%

SJG's planning documents use two degrees(63 HDDs) for design-day planning purposes. The data in the table shows that 65 HDDs have been observed once during the 20 years of historical data provided. For *Daily Game Plan* purposes, SJG calculates an "effective degree days" figure that combines HDD and wind data to estimate the sendout for each day. SJG did not provide any wind data in response to Liberty's data requests.

Load Forecasting

As noted earlier, SJG's Financial Planning group prepares an annual load forecast and a 10-year forecast, including projected load duration curves. The 10-year forecast includes separate results for assumed normal weather and for design, *i.e.*, extreme, weather. The GSD develops a five-

year plan on the basis of FP's 10-year forecast. SJG skipped the forecast preparation process for some of the audit period years.

SJG uses a five-year historical trend of the number of customers by rate class for its forecasts. The Company estimates use per customer by using billed/unbilled data for existing customers. SJG calculates use per customer with an annually-revised heat factor (use/HDD/customer) and a base use factor calculated using the average use in July and August. SJG then uses these two factors and normal and design weather assumptions to calculate forecasted demand for the firm rate classes.

SJG forecasts demand for the following rate classes:

- Firm Rate Classes:
 - Residential Heating
 - Residential Non-Heating
 - Commercial Building Heating
 - Commercial Non-Heating
 - Industrial Building Heating
 - Industrial Non-Heating
 - Large Volume Industrial Firm Sales (LVS)
 - Comprehensive Transportation Service (CTS)
 - Firm Electric Sales (FES)
 - Lighting
 - Large Cogeneration
- Firm Transportation
 - RSG-FT Heat
 - RSG-FT Non-Heat
 - GSG-FT (31) Commercial Heating
 - GSG-FT (21) Commercial Non-Heating
 - GSG-FT (32) Industrial Heating
 - GSG-FT (22) Industrial Non-Heating
- Interruptible Sales.

All heat-sensitive rate classes have a base use and heat use factor. All other classes have a separate base use factor, but no heat factor. This approach has the effect of assuming a constant monthly load profile for these rate classes throughout the forecast. The final demand figure also includes forecasted company use and unaccounted-for gas estimated. This factor is the same 2.80 percent of total sendout that was used in SJG's latest rate case. LVS, CTS and FES are forecast using the latest contract levels provided by SJG's Sales Department. Cogeneration demand is based on the latest customer projections. The Sales Department estimates interruptible sales based on historical sales.

A calculation of the load factor (calculated as (annual forecasted usage)/(maximum monthly forecasted usage*12)) yields the following results:

- 39.7 percent for commercial heating bundled sales customers (5643/(1185*12))
- 50.5 percent for commercial heating transportation customers (7511/(1240*12))

- 39.8 percent for sales residential heating customers ($14142/(3029*12)$)
- 42.4 percent for transportation residential heating customers ($9914/(1948*12)$).

The use per customer is assumed not to exhibit any trend over time. SJG implicitly makes this assumption by not incorporating a trend variable in its forecast methodology. Liberty's analysis of historical heat-use-factor data provided by the Company suggests that this assumption is not correct. The table below shows an overall decrease in the heat use factors over the past 10 years for residential, commercial, and industrial customers.

Table III-5. Trends in Heat Use Factors

SOUTH JERSEY GAS COMPANY Summary of Historical Peak Day Sendout Adjustment 1992 - 2003 Represents Days with More Than 50 DD.							
	01/18/1994	01/19/1994	01/20/1994	01/17/1997	01/18/1997	01/17/2000	1/27/2003
<u>Customers</u>							
Residential	218,997	218,997	218,997	236,759	236,759	255,428	277,062
Commercial	16,241	16,241	16,241	17,116	17,116	15,592	15,753
Small Ind.	350	350	350	332	332	238	202
LVS Industrial	14	14	14	25	25	26	26
Comp. Trans Serv.	0	0	0	0	0	25	32
Firm Electric	1	1	1	1	1	1	1
Lighting	47	47	47	36	36	27	22
Small Cogen.	5	5	5	5	5	2	1
Large Cogen.	2	2	2	3	3	3	5
GSG-FT	0	0	0	443	443	3,459	4,449
Total	235,657	235,657	235,657	254,720	254,720	274,801	297,553
<u>Base Use Factors</u>							
Residential	0.069355	0.069355	0.069355	0.068852	0.068852	0.068525	0.063452
Commercial	0.853226	0.853226	0.853226	0.670492	0.670492	0.303279	0.344219
Small Ind.	9.506452	9.506452	9.506452	4.121311	4.121311	0.862295	1.069808
Lighting	0.761200	0.761200	0.761200	0.889695	0.889695	1.161290	1.431085
Small Cogen	28.419400	28.419400	28.419400	33.154190	33.154190	11.822581	0.000000
GSG-FT	0.000000	0.000000	0.000000	10.451610	10.451610	10.358060	10.578570
<u>Heat Use Factors</u>							
Residential	0.015400	0.015400	0.015400	0.014700	0.014700	0.013200	0.014300
Commercial	0.084800	0.084800	0.084800	0.075400	0.075400	0.051100	0.052400
Industrial	0.345400	0.345400	0.345400	0.206700	0.206700	0.183900	0.149400
Degree Days	56.71	62.33	55.54	51.56	52.70	52.05	50.73
<u>Sendout</u>							
Residential	206,446	225,400	202,500	195,749	199,716	192,998	218,572
Commercial	91,960	99,700	90,349	78,017	79,488	46,200	47,298
Small Ind.	10,183	10,862	10,042	4,907	4,985	2,483	1,747
LVS	15,333	15,181	15,110	18,315	17,766	26,141	24,082
Comp Trans Serv	0	0	0	0	0	2,747	3,841
Firm Electric	5,330	5,500	2,800	354	248	218	73
Lighting	36	36	36	32	32	31	31
Small Cogen	142	142	142	166	166	24	0
Large Cogen	10,810	9,908	13,030	8,999	9,612	7,834	6,013
GSG-FT	0	0	0	4,630	4,630	35,829	47,064
Total	340,240	366,729	334,009	311,169	316,643	314,505	348,721
Actual Sendout	355,508	376,292	337,725	348,040	357,793	380,187	401,917
Per Cent Variance	1.045	1.026	1.011	1.118	1.130	1.209	1.153
Notes: 1. This study looks at January days with more than 50 degree days. In the past, there were 5 days which fell into this category (creating an adjustment factor of 1.066). This study was updated as of 2003 and it was found that there was 2 other days in 2000/2003 that fell into the over 50 dd range. Therefore the average was recalculated to							

3. Conclusions

a. SJG does not retain adequate records of its forecasting data and analyses.

The Company needs to do better at keeping contiguous sets of data for historical data analysis available electronically. Retaining a full history of all information, including weather, daily sendout, billing data by month by customer class and historically used factors would be useful for SJG's own data analysis purposes.

b. SJG's normal weather assumptions are based on a period that is too old, and are not updated to reflect known changes in weather trends.

SJG's current normal weather assumptions are based on a 20-year historical average ending in 1996. On the other hand, NOAA's normal weather is based on a 30-year historical average, and is available for much more recent periods. NOAA data is available for several weather stations in SJG's service territory and is updated on an annual basis to reflect changes in weather trends.

c. The design-day assumption of 63 HDDs is reasonable.

Recent colder weather occurrences (beyond 1996) should also be taken into account in the calculation. Unfortunately, data that is more recent was not provided in response to Liberty's data request for recent weather data.

d. The design-day sendout estimation methodology does not provide adequate estimates.

SJG's current design-day sendout estimation methodology uses base and use coefficients calculated for annual sendout purposes, and an arbitrary increment to the estimated design-day figure based on 63 HDDs. However, the data in Table III-5 indicates that actual sendout during the coldest days has always exceeded SJG's forecasts, by one percent to as much as 21 percent. This phenomenon is recognized by most utilities on the East Coast, and is addressed by separately analyzing the total daily sendout for the utility's coldest days experienced over a certain historical period, which are adjusted for ex-post growth to yield design-day sendout estimates for the current year.

4. Recommendations

9. Retain historical forecasting data in a form that will support analysis.

SJG should retain all forecasting-related data electronically in order to assess changes, make improvements, and measure its success in doing so. Such data includes, but is not limited to historical weather data (including temperature and wind), daily sendout data, historical billing data, annual forecast methodology and coefficients used over the years, daily sendout forecast methods and coefficients used over the years, and analysis comparing forecasted data with actual data to measure and assess forecast precision.

10. Update and revise the data and methods for considering weather in forecasting activities.

The Company should update its weather analysis. The most recent data in the file used for weather analysis is for June 30, 1996. Liberty agrees with the approach of using a large amount of weather data to construct files for normal and design weather. There is no reason to restrict data used to only 20 years, and there is no reason to limit the file to data that is at least nine years old.

NOAA weather data is publicly available, and recently it has been updated annually, incorporating known long-term weather trends and cycles, weather measurement and other adjustments. There is not good reason for using more and more recent data for SJG's weather analysis.

A regression of sendout on observed HDDs may incorporate a base-use assumption similar to the base factors used for annual sendout, and the resulting heat-use coefficients are typically higher than heat-use coefficients obtained on the basis of monthly billing data. Additional explanatory variables such as the day of the week (weekday vs. weekend vs. holiday) and wind would provide more precise estimation of design-day *sendout*. *SJG currently uses such a method to estimate the sendout amount in its Daily Game Plan.* This method should be implemented in generating the design-day forecasts used in its Sendout® models, as these models calculate potential capacity utilization and hence feed into SJG's capacity-planning efforts.

SJG should seek to obtain longer contiguous weather temperature and wind data series for its service territory, and conduct a weather-temperature distribution analysis similar to the one presented in this chapter, weighted based on the number of customers and customer load growth in each area represented by a weather station.

Instead of using a 'buffer' on top of its design-day sendout estimate based on coefficients calculated through monthly billing data, SJG should change its design-day sendout calculation method as described above and make an appropriate determination of whether its design-day assumption should include wind as a factor.

11. Consider trends in use per customer in preparing forecasts.

SJG should include a trend variable in its use-per-customer forecast, or calculate a use-per-customer factor that changes over time to reflect recent trends in use per customer in each rate class. Without incorporating a trend, SJG will likely over-forecast sendout since use per customer typically incorporates efficiency improvements and decreases over time for classes such as residential heating. In fact, the coefficients presented in Table III-5 indicate precisely such a trend.

C. Capacity Planning

1. Summary of Audit Activities

In order to assess the capacity planning activities of SJG, Liberty evaluated SJG's practices against industry standards and common practices in gas supply planning and strategy. Capacity planning activities include assessment of pipeline capacity, storage and peaking in order to meet forecasted demand.

Proper capacity planning involves seeking a resource mix of firm transportation (*FT*), storage, and peaking capacity that minimizes costs while allowing the provision of reliable service under various demand scenarios. Another aspect of capacity planning is to seek to adjust contract terms according to changing market conditions and avoid commitments that may place the company at a disadvantage at better matching its capacity to the forecasted load, and at bargaining and seeking resource alternatives. Considering changing market conditions is particularly important for utilities facing the uncertainty of transportation demand and of customer switching between transportation and utility sales service. Observed SJG customer migration trends between transportation and sales services, historical practices in capacity planning, and limitations on available capacity options affect capacity planning.

A 1995 audit of SJG reached a number of important conclusions about SJG's capacity planning efforts:

- SJG had not adequately evaluated the costs of on-system peaking vs. storage and storage vs. long-haul pipeline transportation (firm transportation, or *FT*).
- SJG had not evaluated ways to lower costs of LNG peaking.
- SJG's *FT* capacity and associated gas supplies exceeded the requirements of the load duration curve.
- SJG had not designed a portfolio of term supply and transportation options to permit flexibility in meeting changing market needs.
- SJG had 'insurance on insurance' to meet firm customer requirements.
- SJG has sufficient quantities of *FT* deliverability and associated gas supplies under existing contracts relative to its projected annual load duration curve.

Liberty's initial review determined that current circumstances made the subject areas of that audit (while not necessarily the conclusions) still relevant. Liberty examined whether these earlier findings had been addressed. Liberty's examination therefore focused on three areas:

- The Company's analysis of capacity alternatives, particularly storage and peaking facilities, in light of the issues identified in the earlier audit
- Progress in shaping capacity profile to its load duration curve
- Responses to the challenge of customer migration from sales to transportation services.

2. Capacity Alternatives Findings

Liberty particularly focused on SJG's evaluation of the costs of on-system peaking versus storage, and versus long-haul *FT* from traditional supply basins. The Company advised us that it had undertaken no formal studies either on its own or in response to the conclusions of the prior audit. It did state that there had been numerous internal discussions regarding the subject matter of those findings. Those discussions focused on the feasibility of replacing the LNG storage tank in McKee City with a larger tank. The conclusion was that a new tank alone would not address delivery issues; planned pipeline improvements would still be required. SJG therefore reached the conclusion that the costs of any peaking improvements:

... appeared to vastly outweigh the benefit, and ... capital dollars would be more effective if invested in pipeline infrastructure.

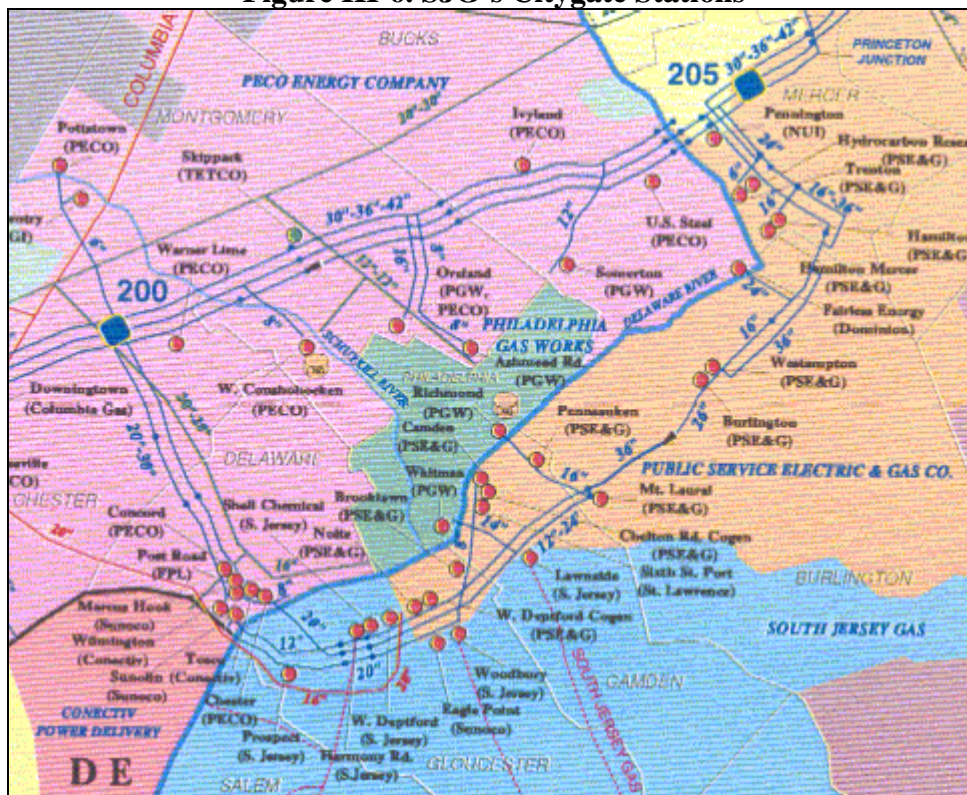
Virtually all of SJG's current gas-supply capacity lies on the northwest side of its service territory. SJG receives gas through direct connections to two interstate pipelines, Transcontinental Gas Pipe Line Corporation (*Transco*) and Columbia Gas Transmission Corporation (*Columbia*). The Transco lateral serving SJG (the *Trenton-Woodbury Lateral*) extends 40 miles from Woodbury to Trenton. Three additional pipelines provide upstream firm transportation capacity:

- Columbia Gulf Transmission Company (*Columbia Gulf*)
- Dominion Transmission, Inc. (*Dominion*, formerly CNG)
- Texas Gas Transmission, LLC (*Texas Gas*)

Transco provides the majority of SJG's gas supply capacity through seven firm transportation agreements (five year-round, one seasonal and one storage-related) and seven storage service agreements. Columbia provides capacity through two firm transportation agreements and one firm storage service agreement. Dominion provides a firm storage service, delivered through Transco via Dominion. The following paragraphs detail SJG's contracted capacities.

SJG receives gas through six delivery points (from west to east: Prospect, Harmony Road, Shell Chemical, West Deptford, Woodbury, Lawnside) on the Transco system, and one delivery point at West Deptford on the Columbia system. The following map illustrates SJG's citygate stations.

Figure III-6. SJG's Citygate Stations



SJG's firm citygate deliverability capacity through the Transco lateral is 265,542 Dth. Of this amount, 175,525 Dth is deliverable via firm transportation, and the remainder through its

maximum daily storage withdrawal quantity of 90,017 Dth. The following table summarizes SJG's contracted capacity on Transco:

Table III-7. Transco Capacity Summary

Item	Quantity (Dth)
Total firm deliverable via FT	175,525
Total firm deliverable via storage MDWQ	90,017
Total firm deliverable through Transco	265,542
Total SCQ for Transco citygate deliverable storage	6,043,325
Total SCQ for Transco WSS storage	4,406,135
Total Transco storage SCQ	10,449,460

SJG also has on-system supplies in the form of LNG, with storage capacity of 404,000 Mcf and vaporization capacity of 75,000 Mcf/day. SJG also operates a high-pressure pipe storage field with storage capacity of 12,000 Mcf and deliverability of 10,000 Mcf/day into the system.

SJG also uses two exchange agreements with PSE&G. In the larger of the two exchanges, PSE&G delivers 30,000 Dth/day to Swedesboro in exchange for SJG's agreement to back-off at the Harmony Road Station to allow PSE&G to take delivery there. SJG has an additional exchange agreement through its Medford Circle interconnection for 5,000 Dth/day. In this exchange, PSE&G delivers 5,000 Dth/day to Medford Township in exchange for SJG's delivery from its citygate to Mt. Laurel (PSE&G city gate) by scheduling an interruptible transportation (#1001387).

The following table summarizes SJG's total citygate deliverable capacity through the Columbia system.

Table III-8. Columbia Capacity Summary

Supplier	Amount (Dth)
SJG	45,022
SJG FSS ¹	52,891
Third Party A ²	30,000
Third Party B	7,000
Third Party C	5,000
Total	139,913

¹From Col FSS storage MDQ

²Best efforts

The total amount of capacity for design-day purposes is the sum of the first two entries; *i.e.*, 97,913 Dth.

SJG's paramount reliance on supply capacity on the northwest side of its service territory has caused the Company to make large investments in its own system, to enable it to move large amounts of gas from those northwestern supply points to markets on the opposite side of its serving area. SJG reports that it has considered at least some changes to this northwestern dominance in supply capacity. It has reached the conclusion that that increasing peak-day supply

capacity in the eastern or southern parts of its distribution system is both unrealistic and not cost-effective. SJG observes that expanding the capacity of the LNG peaking facility at McKee City has been made unrealistic because neighboring residential and school growth poses formidable siting issues. SJG also considers a new peaking facility to be impracticable. SJG expresses some hope about an LNG receiving facility that BP proposes along the Delaware River. That capacity, however, still lies on the northwest side of the system; it will not displace any of the prevailing existing northwest-to-east-and-south flow issues on the SJG system.

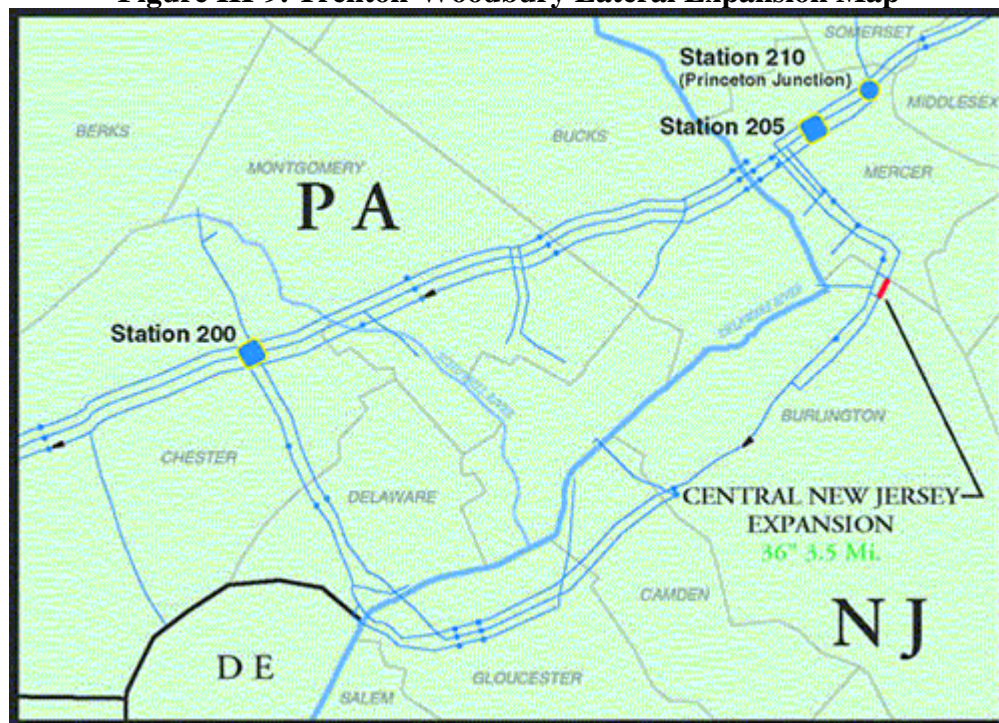
SJG has taken the position that expanded or new eastern peaking projects cannot compete economically with reinforcing and upgrading the distribution system to allow more gas from northwestern capacity to flow east through SJG's distribution system. Recent major capital projects for the utility have generally consisted of west-to-east (and south) reinforcements. SJG's distribution system relies ever more on the free flow of gas from west to east to meet strong growth in demand. SJG invested \$53 million in 2003 (\$300 million invested over the last seven years) to improve its gas distribution system.

Its reluctance to entertain eastern capacity additions notwithstanding, SJG has looked at diversifying its sources of supply on the northwest. The Company has found that expanding access to Columbia is not cost-effective. Moreover, the capacity provided through Columbia's single 30-inch pipeline is inflexible. SJG has, therefore, focused on Transco's Trenton-Woodbury Lateral, and has recently made commitments to significantly augment its capacity on that facility.

SJG will take additional capacity on the Lateral through Transco's Central New Jersey Expansion project, which will provide additional firm transportation service capacity on the lateral. The expansion will require approximately 3.5 miles of new 36-inch pipeline near the company's existing mainline system in Burlington County. Transco claims that the region's pipeline infrastructure is fully utilized and unable to meet additional energy requirements.

Transco received FERC approval for the expansion project on February 11, 2005. The schedule calls for construction on the \$13 million project to begin in the summer of 2005 and to be completed by November 2005. The expansion therefore should be ready to provide an additional 105,000 Dth/day of firm natural gas transportation service to SJG by the 2005-06 winter season. The following map shows the location of the Central New Jersey Expansion project on the Trenton-Woodbury Lateral.

Figure III-9. Trenton-Woodbury Lateral Expansion Map



3. Capacity Alternatives Conclusions

- a. **SJG is correctly concerned about limits on peak-day supply capacity to its service territory.**

SJG has been experiencing significant growth in its service territory. That growth well exceeds the national average and is the largest of any New Jersey LDC. Instability and unpredictability has characterized the retail competitive marketplace in the region. Marketers have reliably supplied industrial and large commercial loads, but SJG has at least twice experienced material numbers of residential and small commercial (*mass market*) customers returning to utility sales service when marketers experienced periods when they could not compete with BGSS prices. Absent a redefinition of its supplier-of-last-resort obligations, SJG must be concerned about the potential for *losing out* on any material expansion project at Transco, which represents one of exceedingly few pipeline options that will likely be available to the Company during a period of expected strong customer growth.

- b. **SJG did not consider its alternatives with sufficient diligence before committing to a share of the Transco Lateral expansion project.**

There were four specific weaknesses in SJG's decision to take capacity on the Transco project:

- Rejection of eastern options; *i.e.*, peaking capacity and demand-management options, without a structured economic analysis
- Failure to perform a structured analysis of the future distribution system reinforcement costs (to support further enhancement of northwest to southeast flows) that could be

avoided by the installation of eastern reinforcements such as new peaking capacity or demand-management options

- Failure to take advantage of available Transco pipeline utilization information and contacts with other Transco capacity holders to identify possible methods for increasing effective ability to use already-existing Transco capacity
- Deferral (until after making a commitment to the Transco expansion) of reductions in assumed marketer service-obligation defaults in design-day calculations.

Were this to be SJG's only opportunity to take or pass on added Transco capacity, the pressure on SJG to commit would understandably have been higher, considering its lack of significant pipeline expansion alternatives. However, SJG was the only party to commit to capacity when Transco held an open season for the proposed expansion. Transco was seeking takers for up to 150,000 Dth per day. SJG not only signed up for less than the total amount; *i.e.*, 105,000 Dth, but was the only party to take any portion of the proposed expansion. In other words, the total market interest apart from SJG was none. SJG therefore did not need to consider this alternative to be its only opportunity for securing that capacity. That SJG was not faced with a *now-or-never* decision is material in examining its failure to look at the other four factors cited as weaknesses in its decision process.

The Company's lack of consideration of peaking options within its service territory, preferring instead to increase its commitment to the Trenton-Woodbury Lateral, was discussed above. Data available on Transco's web site raises questions regarding whether additional capacity on the Lateral is necessary now.

In order to determine whether there might be a capacity shortage on the Lateral, Liberty obtained access to data from the Transco/Williams web site that posts Transco's operationally available capacity four times a day, at 1pm (Intraday 1), 3:30pm (Timely), 8pm (Intraday 2) and 9pm (Evening).

Capacity and flow information are posted continuously on each pipeline's web site. Because of the volume of information that is available, however, the information is maintained for only a few months. Thus, for the purpose of this illustration, Liberty collected data for the three coldest days in December and January of 2004-2005. (The values in the table are for Hammonton.)

Table III-10. December/January Coldest Days

Coldest Days	HDDs	Temp.	Wind
1/28/05	53	12°F	3 mph
12/21/04	52	13°F	5 mph
12/20/04	51	14°F	12 mph

The following table presents what Liberty observed regarding the operationally available capacity on Transco posted for these days.

Table III-11. Posted Capacity Availability on Coldest Days

Operationally Available Capacity on Transco for Pipeline Customers Near SJG (Scheduling cycle: Evening)

Company	Posted Date	Effective Date	End Date	Scheduled (MMBtu)	Available (MMBtu)	Available %
ELIZABETHTOWN	12/19/2004 9:06pm	12/20/2004 9:00	12/21/2004 8:59	204,589.00	44,743.00	18%
PHILAD GAS WORKS	12/19/2004 9:06pm	12/20/2004 9:00	12/21/2004 8:59	166,164.00	67,850.00	29%
PHILADELPHIA ELEC	12/19/2004 9:06pm	12/20/2004 9:00	12/21/2004 8:59	219,783.00	47,558.00	18%
PUBLIC SERVICE E&G	12/19/2004 9:06pm	12/20/2004 9:00	12/21/2004 8:59	812,073.00	718,673.00	47%
ELIZABETHTOWN	12/20/2004 9:03pm	12/21/2004 9:00	12/22/2004 8:59	198,958.00	50,374.00	20%
PHILAD GAS WORKS	12/20/2004 9:03pm	12/21/2004 9:00	12/22/2004 8:59	170,873.00	63,141.00	27%
PHILADELPHIA ELEC	12/20/2004 9:03pm	12/21/2004 9:00	12/22/2004 8:59	214,745.00	52,596.00	20%
PUBLIC SERVICE E&G	12/20/2004 9:03pm	12/21/2004 9:00	12/22/2004 8:59	752,582.00	778,164.00	51%
ELIZABETHTOWN	1/27/2005 9:03pm	1/28/2005 9:00	1/29/2005 8:59	265,250.00	0.00	0%
PHILAD GAS WORKS	1/27/2005 9:03pm	1/28/2005 9:00	1/29/2005 8:59	170,967.00	63,047.00	27%
PHILADELPHIA ELEC	1/27/2005 9:03pm	1/28/2005 9:00	1/29/2005 8:59	214,391.00	52,950.00	20%
PUBLIC SERVICE E&G	1/27/2005 9:03pm	1/28/2005 9:00	1/29/2005 8:59	826,820.00	703,926.00	46%

Operationally Available Capacity from Transco/Williams Pipeline Web Site

TSP	Name	GTP1	GTP1(Prop)/Desc	Design Capacity
7933021	Transco	42233	S JERSEY GAS CO	265,581.00

Posted Date/Time	Effective Date	End Date	Scheduling Cycle	Scheduled (MMBtu)	Available (MMBtu)	Available %
12/19/2004 9:06pm	12/20/2004 9:00	12/21/2004 8:59	EVENING	146,046.00	119,535.00	45%
12/20/2004 1:09pm	12/20/2004 9:00	12/21/2004 8:59	INTRADAY1	149,105.00	116,476.00	44%
12/20/2004 3:33pm	12/21/2004 9:00	12/22/2004 8:59	TIMELY	102,669.00	162,912.00	61%
12/20/2004 8:03pm	12/20/2004 9:00	12/21/2004 8:59	INTRADAY2	149,910.00	115,671.00	44%
12/20/2004 9:03pm	12/21/2004 9:00	12/22/2004 8:59	EVENING	102,669.00	162,912.00	61%
12/21/2004 1:05pm	12/21/2004 9:00	12/22/2004 8:59	INTRADAY1	102,669.00	162,912.00	61%
12/21/2004 3:33pm	12/22/2004 9:00	12/23/2004 8:59	TIMELY	96,389.00	169,192.00	64%
12/21/2004 8:07pm	12/21/2004 9:00	12/22/2004 8:59	INTRADAY2	105,669.00	159,912.00	60%
12/21/2004 9:07pm	12/22/2004 9:00	12/23/2004 8:59	EVENING	96,389.00	169,192.00	64%
12/22/2004 1:06pm	12/22/2004 9:00	12/23/2004 8:59	INTRADAY1	96,389.00	169,192.00	64%
12/22/2004 3:32pm	12/23/2004 9:00	12/24/2004 8:59	TIMELY	91,982.00	173,599.00	65%
12/22/2004 8:03pm	12/22/2004 9:00	12/23/2004 8:59	INTRADAY2	96,389.00	169,192.00	64%
12/22/2004 9:03pm	12/23/2004 9:00	12/24/2004 8:59	EVENING	93,014.00	172,567.00	65%
12/23/2004 1:06pm	12/23/2004 9:00	12/24/2004 8:59	INTRADAY1	93,061.00	172,520.00	65%
12/23/2004 3:33pm	12/24/2004 9:00	12/25/2004 8:59	TIMELY	147,486.00	118,095.00	44%
12/23/2004 8:03pm	12/23/2004 9:00	12/24/2004 8:59	INTRADAY2	93,061.00	172,520.00	65%
12/23/2004 9:05pm	12/24/2004 9:00	12/25/2004 8:59	EVENING	146,818.00	118,763.00	45%
12/24/2004 1:09pm	12/24/2004 9:00	12/25/2004 8:59	INTRADAY1	146,044.00	119,537.00	45%
1/26/2005 9:03pm	1/27/2005 9:00	1/28/2005 8:59	EVENING	162,579.00	103,002.00	39%
1/27/2005 1:06pm	1/27/2005 9:00	1/28/2005 8:59	INTRADAY1	165,486.00	100,095.00	38%
1/27/2005 3:33pm	1/28/2005 9:00	1/29/2005 8:59	TIMELY	155,815.00	109,766.00	41%
1/27/2005 8:04pm	1/27/2005 9:00	1/28/2005 8:59	INTRADAY2	165,965.00	99,616.00	38%
1/27/2005 9:03pm	1/28/2005 9:00	1/29/2005 8:59	EVENING	156,815.00	108,766.00	41%
1/28/2005 1:06pm	1/28/2005 9:00	1/29/2005 8:59	INTRADAY1	166,815.00	98,766.00	37%
1/28/2005 3:34pm	1/29/2005 9:00	1/30/2005 8:59	TIMELY	142,439.00	123,142.00	46%
1/28/2005 8:03pm	1/28/2005 9:00	1/29/2005 8:59	INTRADAY2	166,815.00	98,766.00	37%
1/28/2005 9:02pm	1/29/2005 9:00	1/30/2005 8:59	EVENING	177,231.00	88,350.00	33%
1/29/2005 1:06pm	1/29/2005 9:00	1/30/2005 8:59	INTRADAY1	178,558.00	87,023.00	33%
1/29/2005 3:33pm	1/30/2005 9:00	1/31/2005 8:59	TIMELY	179,583.00	85,998.00	32%
1/29/2005 8:04pm	1/29/2005 9:00	1/30/2005 8:59	INTRADAY2	179,223.00	86,358.00	33%

The tables show that interested parties can get detailed information on flows and available (unused) capacity for each customer, multiple times per day. Given the importance that SJG attaches to its dependence on the lateral, Liberty would expect that SJG knows which customers take gas on the facility. Careful observation over time should allow a meaningful assessment of how much capacity is unused.

Liberty found no indication that anyone at SJG had done any such analysis prior to the decision to commit to the expansion project. Liberty concludes therefore that the decision process for electing to commit to the additional Transco capacity at the present time was premature and unsupported by the kinds of structured analysis that should have preceded a decision of this consequence. The fact that some of the kinds of analyses that Liberty finds lacking were recommended some ten years earlier and still have yet to be undertaken underscores the significance of this conclusion.

In comments on a draft of Liberty's report, the Company replied that it does not rely on the data in the Transco report that Liberty cited (the *Operationally Available Capacity Report*) because the data is incomplete. The Company referred to other reports on the Transco web site that suggest that very little capacity was available on the Trenton-Woodbury Lateral on the days that Liberty cited.

These comments were the first time that the Company acknowledged the possibility that any of the available capacity or flow information about Transco might have relevance to the Company's decision to commit to an expansion of the Transco system. In discussions with Liberty personnel and responses to data requests, Company personnel had indicated a lack of knowledge about the existence of this information. What the available data ultimately show is not the central issue. The failure to have considered this information and to conduct other analysis before committing to the expansion is the concern. The Company's comments on the draft report relies upon two sets of comments that it says it received from Transco, arguing against any possibility that there is underutilized capacity on the Trenton-Woodbury Lateral. These comments underscore the concern that SJG over-relies on what Transco, whose interests are not SJG's, tells it, as opposed to what it learns through its own data gathering and analysis. Transco's opinion may be correct or incorrect; what is of greater significance is what SJG has done and should do to develop its own views on a matter that will cost it and earn Transco much.

Liberty has also reviewed the documentation package provided to the parties in the Company's ongoing rate case as that package relates to SJG's decision to commit to additional capacity on the Lateral. This review confirmed that: (a) it is not clear that commitment to any additional capacity was necessary or appropriate at this time, and (b) the Company did not seriously consider alternatives to the Transco Expansion before committing to it.

The very large investments that SJG has made to increase system capacity tend to support a contributing factor to its bias for northwest-to-southeast flow solutions. Those investments will impose significant costs on SJG's customers in future years. When system investment (more particularly the costs of carrying it) increases faster than the gross margins from increased sales, new plant investment can increase the price required to meet revenue requirements. Liberty expects that the Company's large infrastructure program is likely to result in additional requests for rate increases in future years.

4. Capacity Alternatives Recommendations

12. Require SJG to demonstrate the cost-effectiveness of the Transco Lateral expansion through the BGSS process.

SJG needs to meet the now long-standing need to complete an unbiased, analytically sound analysis of the option of adding supply capacity on the east or south side of its service territory. The first need is to perform rigorous cost/benefit analysis. Liberty believes there is a significant potential that several small LNG or propane/air plants could prove cost-effective. Others certainly have found them to be so. This analysis must, as SJG recognizes, certainly consider environmental, social, and other non-economic constraints and issues, but should not assume them to be overwhelming. Should the economic analysis show merit in eastern alternatives, then

it would become appropriate to look seriously and methods and likelihood of overcoming such constraints.

Demand-side measures also require consideration. In the context of having to provide capacity to move each incremental Dth/day across the Company's service territory, Liberty expects that paying certain customers to get off of the system during peak periods, or even installing alternate-fuel (especially propane) facilities at their locations, could prove cost-effective.

5. Capacity Profile Fit Findings

SJG provided a history of cost reductions related to contract restructuring, from November 1994 to September 2004. These include WESCO FS/NS service costs of \$ [REDACTED] which went down to \$0 upon cancellation of FS/NS service in April 2001, and non-renewal of a call option for the winter of 2001-02. Other long-term supply costs decreased from \$ [REDACTED] down to \$ [REDACTED] over this 10-year period, yielding average annual savings of \$ [REDACTED]. Other cancellations include replacement of SS-3 storage service with identical cheaper storage service and subsequent cancellation of storage service purchased through affiliate SJRG. This action saved approximately \$ [REDACTED]. Over the past four years, cancellations of long-term gas supply purchase agreements yielded savings of approximately \$ [REDACTED].

These changes essentially reflect adjustments in commodity-supply contracts, rather than in capacity contracts. A succeeding chapter of this report discusses these adjustments in the context of changes in SJG's approach to commodity-supply contracting. The exception is the storage contract, which SJG replaced with another storage contract at less cost. The net result of these changes is that the Company's capacity portfolio is essentially the same as it was at the time of the last audit.

Beyond the establishment of proper forecasting methods and obtaining adequate demand forecasts, the evaluation of capacity planning options vis-à-vis potential demand scenarios is best accomplished using a gas-supply optimization model. SJG uses the Sendout® model to evaluate how it will meet demand with the Company's portfolio under various demand scenarios.

Demand scenarios for regulated utilities are typically designed to accommodate potential weather variation, economic variation, and other foreseen demand variation. SJG generates demand scenarios for normal weather and design weather, and for different requirements levels based on the following assumptions:

- Full sales and transportation quantities met with the Company's portfolio of gas-supply resources
- Full sales and transportation quantities less transportation to large-volume (LVS) customers met with the Company's portfolio
- Firm sales only met with Company's portfolio.

Liberty examined the capacity available to meet the first of these assumptions; *i.e.*, SJG must meet all customer requirements, both sales and transportation, with capacity resources that it holds. SJG's design-day analysis for that case indicates the deficiencies (in Dth/day) listed in the following table. This table assumes available supply capacity of 468,455 Dth/day in 2003-04

(including 30,000 Dth/day of peaking capacity) and 438,455 Dth/day (which is the capacity of the current portfolio) during and after 2004-05.

Table III-12. Calculated Design-Day Deficiencies

Winter Season	Forecast	Deficiency
2003-04	536,825	(68,370)
2004-05	551,701	(113,246)
2005-06	567,278	(128,823)
2006-07	582,924	(144,469)
2007-08	599,028	(160,573)
2008-09	612,721	(174,266)
2009-10	626,312	(187,857)
2010-11	640,123	(201,668)
2011-12	653,747	(215,292)
2012-13	667,340	(228,885)

The Company's analysis focuses on peak day. Liberty used the Company's load forecasts and optimization model results to assess the fit between the Company's capacity portfolio and its load duration curve; *i.e.*, to examine what happens on days other than the peak day. In order to assess the fit, Liberty developed load scenarios based on design-weather requirements, ranging between two *end-points*:

- Full requirements (the first of the three assumptions noted above)
- Firm-sales-only requirements (the third assumption).

These requirements estimates were then interpolated in increments of 20 percent between the two end points.

The results of the simulations are presented in the table below. The initial part of the table presents the Company's capacity portfolio relied on to serve design load. The Company's total daily firm transportation (*FT*) capacity is 220,547 Dth, of which 217,545 Dth is year-round capacity and 3,002 Dth is winter-only capacity. From these figures, it is possible to calculate the maximum *FT* capacity level available during each month, presented on the *FT Service Level* row in the table.

In order to assess the maximum injection/withdrawal capability cycle, Liberty relied on the Company's Sendout® runs to provide a feasible utilization profile of its storage capacity including LNG. The total withdrawal capacity indicated by these runs is 14,122,480 Dth for 2003-04 and 14,111,836 Dth for 2004-05. These figures are short of the total storage SCQ capacity of 14,325,482 Dth by about 200,000 Dth. This difference is accounted for in the LNG usage of 200,000 Dth in these runs and the LNG storage capacity of 404,000 Dth. (In fact, the annual LNG capacity is underestimated, since it can be more than the 404,000 Dth LNG storage capacity with LNG injections throughout the winter season using LNG trucking capabilities).

Table III-13. Capacity Requirements Analysis

SJG Capacity Portfolio (in MDt)				
Firm Citygate:	MDQ	SCQ	FT Availability throughout the year:	
Transco FT	175.525		Transco FT 365 days	172.523
Columbia FT	45.022		12/1 to 2/28	3.002
Transco Storage	90.017	6,043.325	Columbia F 365 days	45.022
Transco WSS	-	4,406.135		
Columbia FSS	52.891	3,472.022		
LNG	75.000	404.000		
TOTAL:	438.455	14,325.482		

Design Weather Requirements (in MDt) for 2003-04													
Year and Month:	200311	200312	200401	200402	200403	200404	200405	200406	200407	200408	200409	200410	TOTAL
Days	30	31	31	29	31	30	31	30	31	31	30	31	366
FT Service Level	6,526.350	6,836.957	6,836.957	6,395.863	6,743.895	6,526.350	6,743.895	6,526.350	6,743.895	6,743.895	6,526.350	6,743.895	79,894.652
Sto. Withdrawals (*):	1,932.333	3,207.784	4,627.202	2,593.864	1,690.677	9,900	10,230	9,900	10,230	10,230	9,900	10,230	14,122.480
Sto. Injections (*):	-	45,000	55,000	-	-	1,779.632	2,154.581	2,285.732	2,372.170	2,334.670	1,862.304	1,222.748	14,111.837
Load Requirements:													
Full Sales & Transport:	5,621.102	8,156.708	10,533.432	8,005.785	7,607.693	4,658.189	3,628.906	2,923.002	3,277.912	3,252.240	3,117.321	4,092.353	64,874.643
80%	5,080.106	7,447.040	9,639.946	7,304.834	6,907.039	4,183.027	3,225.933	2,582.294	2,924.879	2,897.696	2,749.951	3,644.596	58,587.341
60%	4,539.109	6,737.373	8,746.461	6,603.883	6,206.385	3,707.865	2,822.960	2,241.585	2,571.845	2,543.152	2,382.582	3,196.839	52,300.039
40%	3,998.113	6,027.705	7,852.975	5,902.932	5,505.731	3,232.702	2,419.988	1,900.876	2,218.811	2,188.608	2,015.213	2,749.082	46,012.737
20%	3,457.116	5,318.038	6,959.490	5,201.981	4,805.077	2,757.540	2,017.015	1,560.168	1,865.777	1,834.064	1,647.843	2,301.325	39,725.435
Firm Sales Only:	2,916.120	4,608.370	6,066.005	4,501.030	4,104.423	2,282.377	1,614.042	1,219.459	1,512.744	1,479.520	1,280.474	1,853.568	33,438.133
Storage Withdrawal and Peaking Requirements:													
Full Sales & Transport:	-	1,319.751	3,696.475	1,609.922	863.798	-	-	-	-	-	-	-	7,489.945
80%	-	610.083	2,802.989	908.971	163.144	-	-	-	-	-	-	-	4,485.188
60%	-	-	1,909.504	208.020	-	-	-	-	-	-	-	-	2,117.524
40%	-	-	1,016.018	-	-	-	-	-	-	-	-	-	1,016.018
20%	-	-	122.533	-	-	-	-	-	-	-	-	-	122.533
Firm Sales Only:	-	-	-	-	-	-	-	-	-	-	-	-	-
Capacity beyond FT, available for Injections, Capacity Releases and/or Off-System Sales (i.e. Capacity Available for Secondary Market Transactions):													
Full Sales & Transport:	2,837.581	1,843.033	875.727	983.942	826.879	98.429	970.638	1,327.516	1,104.043	1,167.215	1,556.625	1,439.024	15,030.652
80%	3,378.577	2,552.701	1,769.213	1,684.893	1,527.533	573.591	1,373.611	1,668.224	1,457.076	1,521.759	1,923.995	1,886.781	21,317.954
60%	3,919.574	3,262.368	2,662.698	2,385.844	2,228.187	1,048.753	1,776.584	2,008.933	1,810.110	1,876.303	2,291.364	2,334.536	27,605.256
40%	4,460.570	3,972.036	3,556.184	3,086.795	2,928.841	1,523.916	2,179.556	2,349.642	2,163.144	2,230.847	2,658.733	2,782.293	33,892.558
20%	5,001.567	4,681.703	4,449.669	3,787.746	3,629.495	1,999.078	2,582.529	2,690.350	2,516.178	2,585.391	3,026.103	3,230.052	40,179.860
Firm Sales Only:	5,542.563	5,391.371	5,343.154	4,488.697	4,330.149	2,474.241	2,985.502	3,031.059	2,869.211	2,939.935	3,393.472	3,677.809	46,467.162

Design Weather Requirements (in MDt) for 2004-05													
Year and Month:	200411	200412	200501	200502	200503	200504	200505	200506	200507	200508	200509	200510	TOTAL
Days	30	31	31	28	31	30	31	30	31	31	30	31	365
FT Service Level	6,526.350	6,836.957	6,836.957	6,175.316	6,743.895	6,526.350	6,743.895	6,526.350	6,743.895	6,743.895	6,526.350	6,743.895	79,674.105
Sto. Withdrawals (*):	1,696.080	3,197.927	4,727.224	2,559.261	1,860.724	9,900	10,230	9,900	10,230	10,230	9,900	10,230	14,111.836
Sto. Injections (*):	-	45.000	55.000	-	-	1,759.907	1,847.305	2,413.705	2,348.221	2,341.467	1,850.163	1,451.070	14,111.838
Load Requirements:													
Full Sales & Transport:	5,721.659	8,334.717	10,799.413	8,108.825	7,783.098	4,742.997	3,680.809	2,956.133	3,312.160	3,286.817	3,155.036	4,157.243	66,038.907
80%	5,131.399	7,545.236	9,792.523	7,336.323	7,007.859	4,232.091	3,255.787	2,602.482	2,945.764	2,918.911	2,771.891	3,682.406	59,222.670
60%	4,541.139	6,755.755	8,785.633	6,563.820	6,232.621	3,721.184	2,830.764	2,248.831	2,579.368	2,551.005	2,388.746	3,207.569	52,406.434
40%	3,950.879	5,966.274	7,778.743	5,791.318	5,457.382	3,210.278	2,405.742	1,895.180	2,212.971	2,183.098	2,005.601	2,732.732	45,590.198
20%	3,360.619	5,176.793	6,771.853	5,018.816	4,682.143	2,699.372	1,980.719	1,541.528	1,846.575	1,815.192	1,622.457	2,257.894	38,773.962
Firm Sales Only:	2,770.359	4,387.313	5,764.963	4,246.314	3,906.905	2,188.466	1,555.697	1,187.877	1,480.179	1,447.285	1,239.312	1,783.057	31,957.726
Storage Withdrawal and Peaking Requirements:													
Full Sales & Transport:	-	1,497.760	3,962.456	1,933.509	1,039.203	-	-	-	-	-	-	-	8,432.928
80%	-	708.279	2,955.566	1,161.007	263.964	-	-	-	-	-	-	-	5,088.816
60%	-	-	1,948.676	388.504	-	-	-	-	-	-	-	-	2,337.180
40%	-	-	941.786	-	-	-	-	-	-	-	-	-	941.786
20%	-	-	-	-	-	-	-	-	-	-	-	-	-
Firm Sales Only:	-	-	-	-	-	-	-	-	-	-	-	-	-
Capacity beyond FT, available for Injections, Capacity Releases and/or Off-System Sales (i.e. Capacity Available for Secondary Market Transactions):													
Full Sales & Transport:	2,500.771	1,655.167	709.768	625.752	821.521	33.346	1,226.011	1,166.412	1,093.744	1,125.841	1,531.051	1,145.812	13,635.196
80%	3,091.031	2,444.648	1,716.658	1,398.254	1,596.760	544.252	1,651.033	1,520.063	1,460.140	1,493.747	1,914.196	1,620.649	20,451.433
60%	3,681.291	3,234.129	2,723.548	2,170.757	2,371.998	1,055.159	2,076.056	1,873.714	1,826.536	1,861.653	2,297.341	2,095.486	27,267.669
40%	4,271.551	4,023.610	3,730.438	2,943.259	3,147.237	1,566.065	2,501.078	2,227.365	2,192.933	2,229.560	2,680.486	2,570.323	34,083.905
20%	4,861.811	4,813.091	4,737.328	3,715.761	3,922.476	2,076.971	2,926.101	2,581.017	2,559.329	2,597.466	3,063.630	3,045.161	40,900.141
Firm Sales Only:	5,452.071	5,602.571	5,744.218	4,488.263	4,697.714	2,587.877	3,351.123	2,934.668	2,925.725	2,965.373	3,446.775	3,519.998	47,716.377

(*) Max Inj/Withdrawal Cycle From Company's Design Weather/Full Sales Portfolio Scenario

Based on the load requirements and available capacity, the requirement for storage withdrawal and peaking can be calculated by subtracting the FT Service Level capacity from the load requirements. These figures are zero where the FT capacity is enough to serve the load, and positive when an amount beyond the monthly FT capacity is needed. There are two important observations at this stage:

- For the case where the Company must serve all of its customers, both sales and transportation, with Company-provided supply, only about half of the storage capability

is used: 7.5 MMDth in 2003-04, and 8.4 MMDth in 2004-05. Total storage capacity on-system and under contract is 14.3 MMDth.

- For the other cases, the Company uses progressively less of the available storage capacity, down to none in both 2003-04 and 2004-05 if the Company's capacity is only used to serve its own sales load.

These results suggest that the Company has far too much pipeline capacity relative to peaking and storage. In comments on a draft of this report, the Company provided several clarifications:

- WSS is a storage service and should be included in our estimates of storage utilization.
- Of the 175,525 Dth/day of capacity on Transco, 10,350 Dth/day is tied to a storage service on Dominion. Additionally, 5,693 Dth/day was tied to a storage service on Equitrans that was terminated. The pipeline capacity was retained to provide access to market-area spot purchases in winter.
- By contract, transportation for re-deliveries from storage must bear a certain relationship to storage capacity under a related contract.

Liberty disagrees with the first point. WSS is a valuable resource that provides the option to buy and store when prices are low, and to take deliveries of stored gas when prices are high. WSS is production-area storage, however, which means that it substitutes for field-market purchases when circumstances permit. It still requires long-line transportation (*FT*) for delivery to the Company's customers; therefore, it does not help the Company shape its delivery-capacity resources to its load.

Regarding the Company's second and third clarifications, Liberty believes that they may affect the degree of over-reliance on *FT*, but not the essential point. Liberty agrees with the Company that its capacity portfolio should be examined in detail in its BGSS proceedings, where the BPU and the Company's customers can address the subject in more detail.

6. Capacity Profile Fit Conclusions

a. SJG is long on pipeline capacity relative to storage and peaking.

The Company explains its over-subscription of pipeline capacity with the same logic that it uses to justify its dependence on west-side delivery capacity (the Trenton-Woodbury Lateral) and west-to-east flow to serve its markets. The logic is that peaking plants would be impossible to site in the eastern and southern parts of its service territory, and would not be cost-effective. Because any viable storage or peaking option would have to be off-system, it would still require capacity on the Trenton-Woodbury Lateral to transport it to SJG's city gates. As Liberty noted earlier, the problem one should have in accepting this conclusion at present arise from the lack of structured, unbiased analysis of it by the Company.

The results of Liberty's annual capacity-utilization analysis differ widely from SJG's peak-day analysis. As the audit of almost 10 years ago found, Liberty believes that SJG must do substantially more work in examining its peak-period supply options. The Transco system map makes clear that neighboring utility companies; *e.g.*, PECO, Philadelphia Gas Works and PSE&G, connect to Transco's main line and to the Trenton-Woodbury Lateral. Those LDCs are

also connected to other pipeline systems. Liberty asked SJG personnel whether they had inquired at these companies about the possibility of displacing capacity through their systems from the main line to the Lateral during peak periods. The Company's response was as follows:

South Jersey has not had conversations with these parties to specifically address the concept of displacing gas through their systems thus allowing SJG to take greater quantities through the lateral. However, SJG has had conversations throughout the years with many LDCs on ways to work cooperatively during peak sendout times. ... [I]f a counterparty were to be willing to give up delivery rights on the lateral, they would want to be compensated. It is assumed that the only way to value this service would be to consider [it] similar to a peaking service that carries with it a demand charge for the "capacity" at the needed meter station. These demand charges would exceed the cost of the Trenton Woodbury lateral expansion. ... [E]ven if the displacement were possible and the more economic alternative, it would be a short term fix for a long term problem. ... The expansion of the Trenton Woodbury lateral is an economical long term solution for SJG's customers.

Liberty has seen no analysis nor has SJG made direct inquiries that would provide the support needed to take comfort in the conclusions that it has drawn.

b. SJG does not undertake substantial efforts to shape its capacity profile to its load duration curve.

SJG has provided some load duration curve analysis, but it cannot be concluded that SJG has sought to measure the balance of requirements among FT, storage and peaking capacity. The Company's determination that it required additional peak-day capacity resulted in a commitment to 365-day capacity. Any *sculpting* of the capacity to better match the estimated load is done after the fact at the capacity-release and off-system-sales level.

SJG has not adequately pursued peaking capacity. SJG can seek peaking capacity through displacement (on the Lateral vs. the main line on Transco) by negotiating with PECO, PGW and PSEG. These companies could be asked to take more capacity on the mainline and less on the lateral. SJG currently has a 30,000 Dth/day exchange arrangement with PSE&G, which it does not include in its design-day planning since it is made available on a best-efforts basis. Clearly, the capacity exists for exchanges. Serious pursuit of them by SJG may well offer supply options that provide a better fit to SJG's requirements.

7. Capacity Profile Fit Recommendations

13. Adopt a programmatic approach to securing and using available information regarding Transco's facilities.

The Company's approach to capacity contracting is driven by an assumption that Transco will someday curtail secondary deliveries on the Lateral, but the Company does not have sufficient independent information for determining the likelihood of that event or the time frame in which it will become a meaningful possibility. Given the importance of these facilities to the Company,

Liberty was surprised to learn how little the Company knows about the availability of capacity on the Trenton-Woodbury Lateral, and about its use. While Liberty was able to obtain some information about the Transco system through the Williams (Williams is Transco's parent company) web site, Liberty was surprised that the Company had little knowledge of physical capacity, little or no knowledge of users and uses, and had not inquired into the potential for displacement across other LDC systems that are connected to the Lateral.

Liberty had considerable difficulty obtaining access to the Transco information, due to Transco's quite-legitimate concerns about national security and commercial confidentiality. Access restrictions for entities such as Liberty due to these concerns are understandable, but should not restrict SJG efforts to secure and use this information.

14. Explore displacement alternatives involving neighboring utilities.

Liberty does not know whether PECO and/or PGW are sufficiently interconnected behind their respective city gates to enable displacement as a source of supply-capacity alternatives for SJG. Such analysis is not very difficult, however, and a comprehensive efforts to identify SJG capacity alternatives should include it..

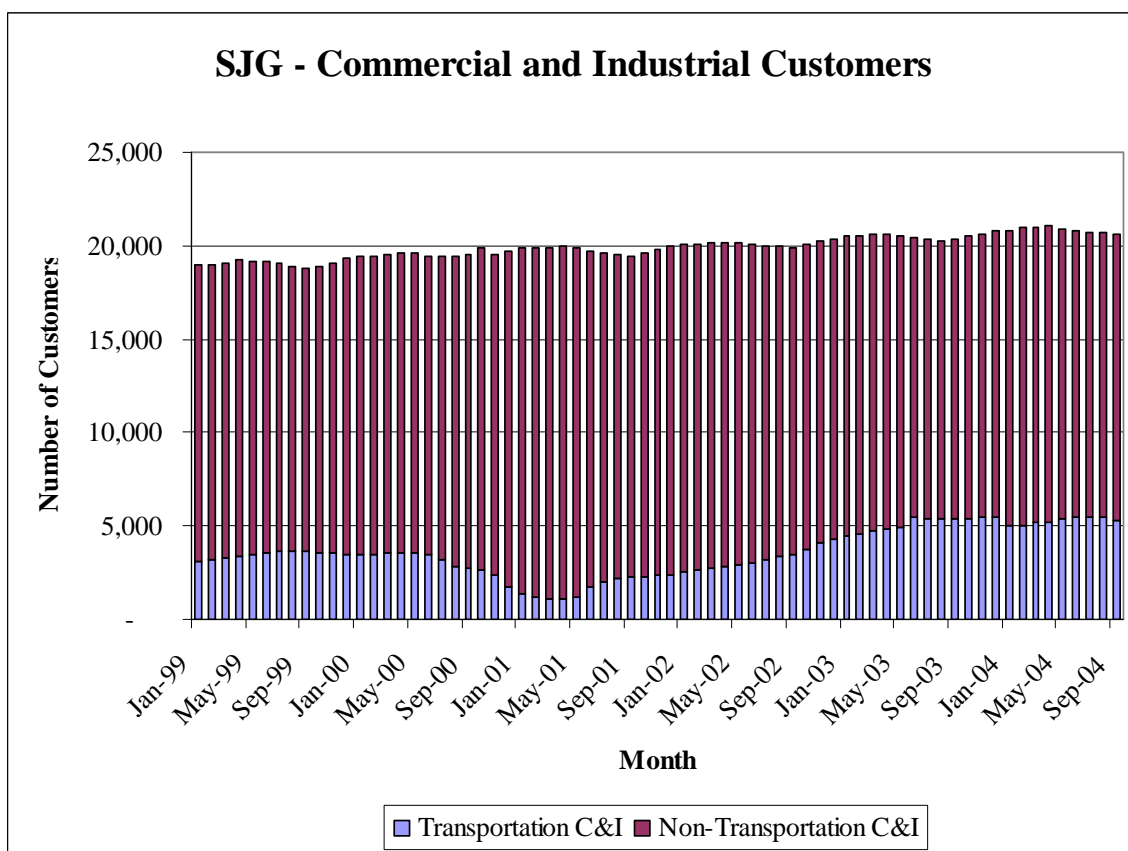
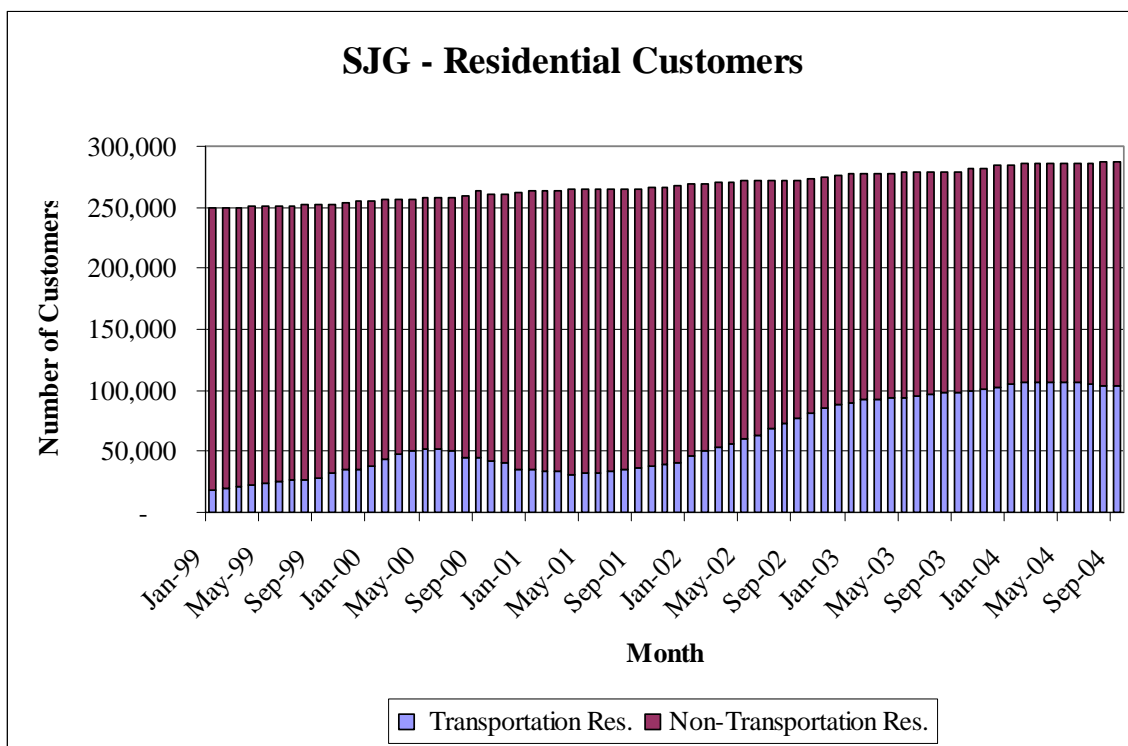
15. Address the question of the relationship between the capacity profile and the load duration curve in the next BGSS proceeding.

As demonstrated in this chapter, SJG's portfolio does not provide a good match to its load duration curve. The BPU and the parties to the Company's rate proceedings should address this issue, and require SJG to analyze and propose various ways that the fit can be improved. Furthermore, the additional capacity sought by the Company is justified only on a design-day basis. As the preceding analysis suggests, the Company's acquisition of FT capacity to meet design-day requirements will only result in furthering the mismatch between its capacity portfolio and its load duration curve requirements.

8. Changing Market Conditions Findings

The mobility of transportation customers is an important issue in SJG's capacity planning. The following charts illustrate the split of number of customers between transportation and non-transportation customers.

Table III-14. SJG Customer Trends



A decrease in the number of transportation customers after the year 2000 shows in both graphs. In May 2000 there were 55,602 transportation customers and April 2001 there were only 32,263 transportation customers left. This migration of 23,339 customers back to utility service represented a return of 42 percent of transportation customers to non-transportation classes. During this period, the ratio of transportation customers to total customers dropped from 20.02 percent to 11.35 percent. As of September 2004, this ratio has grown back to about 35 percent.

SJG is the supplier of last resort for all of its 305,000 customers, both sales and transportation. Therefore, gas supply planning has evolved around acquiring a resource mix that will meet the needs of these customers on a firm basis. This focus on the supplier-of-last-resort (SOLR) function has driven SJG's capacity-planning efforts. In New Jersey, regulated utilities have provided basic gas supply service (BGSS) for over 70 years; hence, they are required to perform the SOLR obligation. BGSS is defined in the Electric Discount and Energy Competition Act of 1999 (EDECA) as:

... gas supply service that is provided to any customer that has not chosen an alternative gas supplier, whether or not the customer has received offers as to competitive supply options, including, but not limited to, any customer that cannot obtain such service for any reason, including non-payment for services. Basic gas supply service is not a competitive service and shall be fully regulated by the Board.

The Company views the capacity-planning problem as a long-term problem. In the Company's experience, capacity options take a long time – perhaps five to 10 years – to materialize. The Company's approach is that, given the variability in the number of customers that buy their gas from a seller other than the utility, and given the tendency of gas marketers to enter a market and then withdraw from it, the Company must address the capacity needs of all of the customers (sales and transportation) served by its system.

Customer behavior and marketer activity, on the other hand, are reasonably predictable year to year. If a marketer is able to buy a package of gas advantageously, it will mount an aggressive campaign to attract additional customers. If gas prices turn against that marketer, it may not renew its customers' supply contracts when they end.

Thus it is that SJG can have a capacity deficit in the long term, but have considerable capacity available for release and off-system sales in the short run. SJG has considerable confidence in its ability to predict its supply-capacity needs for the next year or two, but feels that it has to be prepared for the possibility that all customers will come back to sales service over the next 10 years. SJG's confidential strategic plans for a given year detail planned capacity release quantities for the upcoming winter season, indicating plans and intent to release capacity with knowledge of the SOLR obligation, but with the expectation that non-BGSS customers will provide their own gas supply.

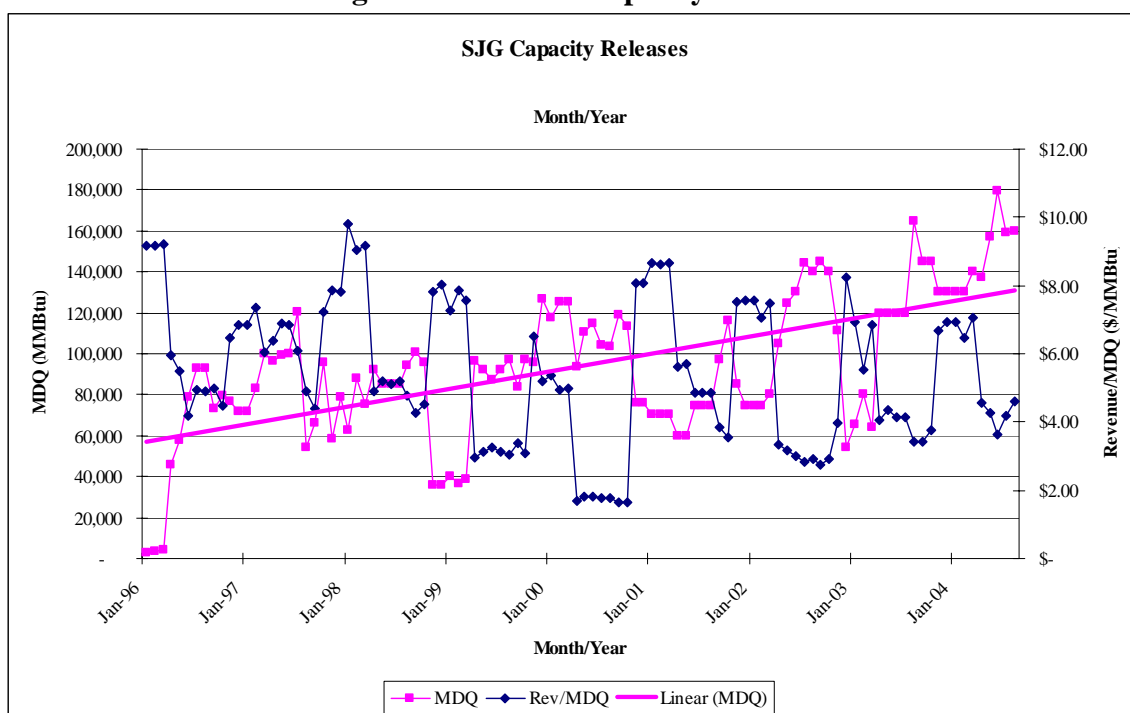
The 2003 strategic plan, for example, indicated that SJG planned to release 80,000 Dth/day of FT capacity on a non-recallable basis during the 2003-2004 winter season. During that season, SJG capacity-release transaction details indicate that 130,000 Dth/day of FT capacity was actually released during the months of November through February, and 140,000 Dth/day was released in

March 2004. Therefore, one can argue that the 80,000 Dth/day of capacity, at least, was deemed *not necessary for meeting firm sales demand* in capacity planning, and that an additional 40,000 to 50,000 Dth/day was released on the premise that the utility would be able to serve its firm sales customers given the migration trends observed coming out of the winter season.

The Company advised that it plans these releases on the basis of normal weather, not the more severe weather that it uses to plan the capacity it needs to provide service through the same underlying facilities. If weather is unusually cold, or capacity requirements are unusually high for some other reason (the failure or withdrawal of a small marketer, for example) the Company is confident that, for that one season, it will be able to go into the market and find enough capacity on a short-term basis to satisfy its obligations to its customers.

The following chart illustrates SJG's capacity-release transactions from January 1996 to August 2004. The trend line illustrates the increases in capacity-release amounts over this period, which is reflecting a) the growth in the number of customers served by suppliers other than the utility, and b) the utility company shifting away from off-system sales toward capacity releases.

Figure III-15. SJG Capacity Releases



9. Changing Market Conditions Conclusions

- a. The dichotomy between SJG's assessment of its long-term capacity requirements and the shorter-term behavior of its customers is producing anomalous results.

SJG's secondary-market program, consisting of capacity releases and off-system sales, is now larger than its on-system markets. In 2003, for example, SJG sold and transported 56.9 Bcf on its own system, but transacted 68.2 Bcf in capacity releases and off-system sales.

10. Changing Market Conditions Recommendations

16. Address the SOLR issue in discussions between SJG and its customers.

An obvious forum for that discussion is Phase 2 of the Company's current rate proceeding. In the next chapter, Liberty presents an overview discussion of the issue to facilitate discussions among the parties to that proceeding.

IV. Secondary-Market Activities

A. Background

The Company has maintained an active program of capacity release and off-system sales (referred to collectively as *secondary-market activities*) essentially since it was first assigned pipeline and storage capacity as part of the FERC Order 636 implementation process. The following table illustrates the growth of the program over the period covered by this audit.

Table IV-1. Growth of SJG Secondary-Market Program

Year	Capacity Releases	Off-System Sales	Total
1996	21.3	8.9	30.1
1997	33.4	15.0	48.7
1998	28.7	27.8	56.5
1999	30.4	44.1	74.5
2000	38.7	39.4	78.1
2001	28.3	31.4	59.7
2002	39.6	31.2	70.7
2003	42.8	28.1	70.9
2004	56.8	22.1	78.9

MMDth; totals may not add due to rounding.

The Company has an established set of policies and procedures, pursuant to which it conducts its secondary-market program. Those policies and procedures include:

- Determining the amount of capacity to be marketed on annual, seasonal and monthly bases
- Estimating the value of the capacity to be made available and identifying approved counter-parties for entering transactions
- Recording completed transactions.

Estimating margins for off-system sales also requires that SJG subtract an appropriate gas cost. The following portions of this section describe these processes.

The Director, Gas Supply & Off-System Sales and the Senior Vice President, Gas Supply, Delivery and Sales determine the amount of capacity that SJG will remarket. They begin prior to each heating season with the total amount of delivery capacity available, including pipeline and storage capacity under contract and on-system peaking resources. They then subtract from total available capacity the peak-day capacity requirements estimated by the Budget Department, and make adjustments for the estimated amounts of peak-day capacity that they expect third-party suppliers to provide to customers behind SJG's city gates. The Budget Department's monthly requirements forecasts form the basis for corresponding estimates of on-system capacity requirements for the rest of the year (other than for the peak day). SJG compares those estimates to the amount of capacity under contract in order to determine the capacity that it can remarket off-system. In general, the amount of capacity available to be marketed off-system roughly

equals the amount of gas expected to be supplied by third-party suppliers, less the estimated amount of interruptible sales.

SJG negotiates capacity-release and off-system sales transactions informally. Interested parties generally contact the director beginning at the end of each heating season to discuss capacity for the next 12 months or the next heating season. SJG generally makes capacity available in the form of capacity releases through the summer. SJG generally switches to off-system sales (bundling capacity with supply) for movements of gas during the heating season. The director prefers to enter a series of annual, seasonal, and monthly transactions over the course of a year. SJG therefore does not use a more structured process of periodic solicitations and awards. The reason is the director's belief that SJG's less-formal process allows it to adjust the capacity offered to correspond to developments in the availability of third-party supplies, and thereby take advantage of changes in market conditions as they occur.

The director and his staff use a variety of sources to estimate the value of the capacity that they want to sell. Market contacts comprise a principal information source. They test this information with postings on the InterContinental Exchange (*ICE*). Final transaction prices result from negotiation between the Company and interested counter-parties. Those eligible to be counter-parties must have approval from SJI's finance department. This SJI department retains for each approved counter-party a file containing standard form contracts and credit-limit information.

SJG enters all transactions into its *Off-System Sales Database*. SJG issues confirmations for each transaction; they conform to standard Exhibit A of the GISB (or *NAESB*) contract on file. The *Off-System Sales Database* produces the *Off-System Sales and Capacity Release Estimated Report* soon after the close of each month. The Accounting Department receives the report, and finalizes margin information as part of its exercise of authority over determining purchased-gas costs.

B. Summary of Audit Activities

The purpose of a secondary-market program is to reduce the net costs of the supply-capacity resources that an LDC must maintain in order to provide firm service to its system-supply customers. The criteria that Liberty applied in assessing whether the Company's program is successfully meeting this objective were as follows:

- Whether the Company's program compared favorably with those of the other gas-only LDCs in New Jersey in recovering capacity costs
- Whether the Company's program is recovering the costs of any excess capacity being held to accommodate future market growth
- Whether the Company's program meets industry standards from a controls perspective.

Liberty sought through data requests and interviews to understand SJG's approach to the program and the processes by which the Company carries it out. Liberty then compared the results of the program to those of the other gas-only LDCs in New Jersey. Liberty examined any available reviews of the program by the Company's internal and external auditors, and compared controls aspects to those of other companies on the basis of Liberty's experience.

C. Findings

Liberty compared SJG's secondary-market program with those of Elizabethtown Gas Company (ETG) and New Jersey Natural Gas Company (NJN) on several bases:

- The volume of secondary-market activity relative to the size of the companies' on-system firm loads
- Proportion of *reserve capacity* that each company is able to place through its secondary-market program
- Unit margins that each is able to obtain through secondary-market activities.

The NJBPU defines *reserve capacity* for the five-year forecasts of requirements and supplies that it requires the LDCs to file twice each year. The comparisons presented here use data from the companies' filings for spring, 2004 for NJN and SJG. The data used for ETG comes from 2002, which is the last full year for which complete data is available.

Table IV-2. NJ LDC Remarketing Activity

	ETG	NJN	SJG
Releases and Sales			
Design weather firm load	38.5	76.6	66.3
Capacity release and off-system sales	21.2	61.5	78.9
Proportion (%)	55.1	80.3	119.0
Reserve Capacity Placement			
Design weather reserve capacity	29.0	43.5	31.8
Capacity release and off-system sales	21.2	61.5	78.9
Proportion (%)	73.1	141.4	247.8
Unit Margins			
Capacity release and off-system margins (\$MM)	N.A.	19.1	24.0
Capacity release and off-system volumes	N.A.	61.5	78.9
Unit margins (cents/Dth)	17.9	31.1	30.4

Figures are in MMDth, except where noted

The comparisons show that SJG's secondary-market volumes are quite large. SJG's volumes are almost as large as the other two companies combined, and they are very large in relation to its on-system load. They are more than twice as large as ETG's, and half again as large as NJN's. The comparisons also show that the Company is effective in using its capacity portfolio in secondary-market transactions, and that it generates considerable margins through this activity.

An important difference among the companies lies in their respective approaches toward the estimation of reserve capacity. The other two companies count firm third-party transportation volumes as available when they estimate the amount of capacity available to serve their loads. SJG counts only 58.6 percent of firm transportation volumes as available. Thus, SJG's reserve capacity; *i.e.*, the difference between its firm load and available capacity, is much smaller relative to its on- and off-system sales than are comparable figures for the other two companies. This difference in approach is why SJG seems to be able to place two-and-a-half times the amount of its reserve capacity in secondary-market transactions.

Liberty requested copies of any internal or external reviews of the gas-supply function. The Company provided reports from eight internal audits. One addressed transaction *capture* in the *Off-System Sales Database*. The report recommended one improvement; *i.e.*, add the transaction date to the transaction record. Management agreed with and implemented that recommendation.

Liberty reviewed the structure and operation of the *Off-System Sales Database*, and compared this database with the transaction-tracking system used by South Jersey Resources Group (SJRG) the Company's wholesale marketing affiliate. SJRG titles its system *RADAR*.

SJG uses a *Lotus Approach 123* database to track its off-system sales and capacity releases. This database holds transaction data for all sales and capacity releases since 1999. The database includes important data fields, such as counter-party name, delivery location, flow dates, price and volume.

Gas purchases are captured in a Microsoft Excel spreadsheet called *the monthly spot purchase file*. There is one spot purchase file per month. Each spot purchase file contains only those purchases that occur in that particular month. The spot purchase file captures many of the same fields as the off-system sales database.

The entry of sales and purchases into separate types of files means that the transaction details are recorded in a different format. The sales database allows SJG to perform various data queries, generate reports, and produce the transaction confirmation that is sent to the company who purchased gas. The monthly spot purchase file organizes purchases by pipeline, then by counter-party. It also contains only one month's worth of information. Thus there is no report or invoice generation and data queries are non-existent.

When a sale or capacity release occurs, the traders provide the deal information to SJG's senior gas supply clerk. The clerk then inputs the sales and capacity release transactions into the database. The senior gas supply clerk is also responsible for maintaining the database and generating all necessary invoices from the transaction data captured in the system. The senior gas supply clerk informed Liberty that she added password protection to the file during the audit. The only access to the database is through the senior gas supply clerk's computer. The senior gas supply clerk is responsible for making any changes or corrections to deals that have already been entered into the sales database. The database does not, however, possess the capability to track changes that have been made to transactions entered into the system. While access to the system is restricted, changes may occur with no detailed record of the change; *i.e.*, what data fields were changed, the reasons for the change, and personnel responsible for the change.

The traders are responsible for inputting purchases in the monthly spot files. These files are not password protected, nor are changes made to deals tracked in any way.

SJRG uses a system called *RADAR* to record gas sales and purchase information. SJRG hired an outside consultant to create *RADAR*, which uses *Microsoft Access*, and links together several different databases. *RADAR*'s deal entry database requires the same data inputs for sales and purchases. This linkage allows for various data querying and report generation of both sales and

purchase transaction data. SJRG's two traders are responsible for entering their own transactions into RADAR. At the close of business each day, SJRG uploads a copy of RADAR to the network at SJI's Folsom office. This upload preserves a backup copy of the system. Any changes that are made to data recorded in RADAR after one of these daily backups is recorded by RADAR's audit function. If SJRG personnel need to change data associated with a deal; *i.e.*, counterparty, price, volume, RADAR will capture any changes that are made. SJI personnel routinely check these changes and will question SJRG as to the reason for the change.

SJI's independent accountants examined the RADAR system as part of the review of the 2002 financial statements. The independent accountants made a number of suggestions for improving RADAR, enhancements to improve internal controls on that system. The auditor reported that SJRG agreed to the recommended changes.

D. Conclusions

a. SJG's secondary-market program is effective in placing the Company's reserve capacity.

The data provides clear evidence of the effectiveness of the Company's secondary-market program in placing reserve capacity and in recovering the costs of that capacity. Even using the other companies' less-conservative estimate of available capacity; *i.e.*, counting firm transportation capacity as 100-percent available, rather than only 58.6-percent available, SJG places its reserve capacity in secondary-market transactions at a higher rate than do the other two companies. Theoretically, the reserve capacity consists of a blend of pipeline, storage, and peaking capacity. Liberty's analysis of SJG's capacity indicates, however, that the Company uses all of its peaking and storage, so any reserve is almost purely pipeline capacity.

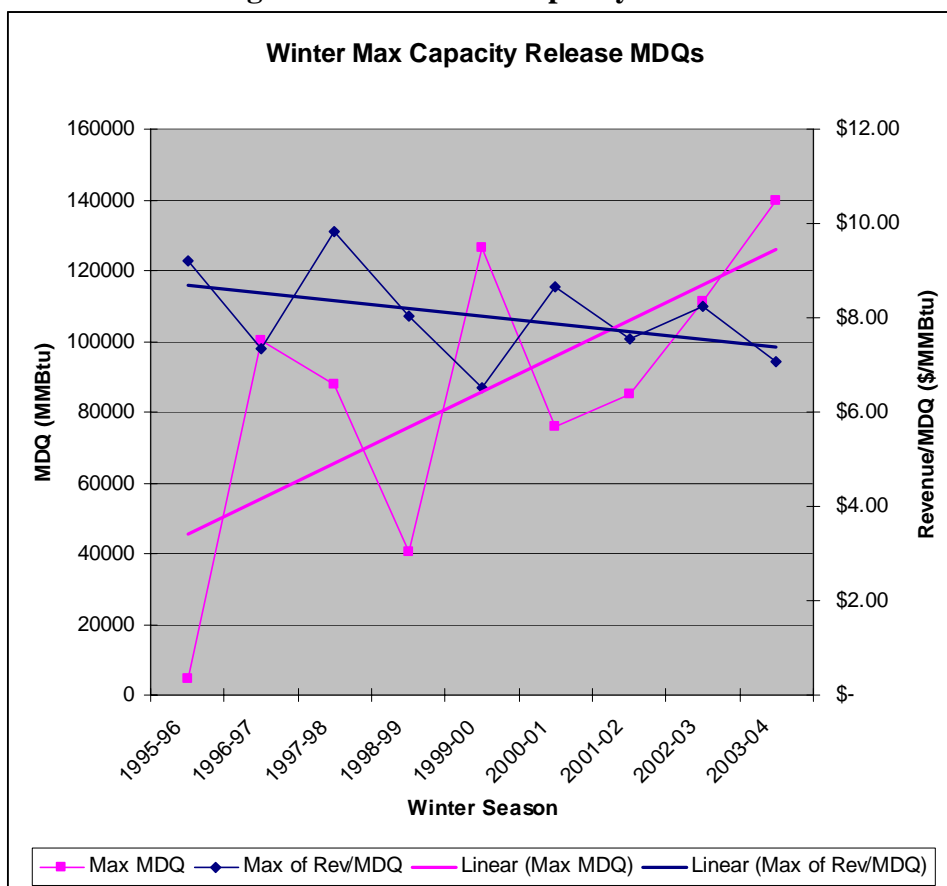
Moreover, Liberty estimates that SJG's secondary-market program recovers a significant portion of the reserve capacity. The Company estimates its weighted-average pipeline capacity costs at 40 to 42 cents/Dth. The data from the table suggests that SJG's unit margins for secondary-market transactions are about 30 cents/Dth. These margins are shared between customers and the Company, however. Customers currently benefit in the amount of 80 percent of the margins listed in the preceding table, which generated about 24.3 cents/Dth in 2004. Until recently, however, customers received substantially lower shares of the margins produced by remarketing activities; therefore, this conclusion is effective only following the changes made in sharing in the recent rate case.

The key factor is the rate of placement. Even with the less-conservative estimate of available capacity used by the other two companies, SJG places over 1.6 Dth in a secondary-market transaction for every 1.0 Dth of reserve capacity. Thus, SJG generates almost 40 cents/Dth (1.6 times 24.3 cents) in customer share of secondary-market margins for every Dth of reserve capacity available. That amount is close to the 40 to 42 cents that the Company estimates as the cost of each Dth of capacity.

b. SJG's secondary-market program is so large that it may be devaluing the capacity that the Company is trying to place.

The following graph focuses on winter capacity releases, which can be taken as a measure of extra capacity beyond recognized needs for winter planning and design-day planning. The graph shows that the average revenue (per Dth/day of capacity) brought by these capacity releases has slightly decreased over time (which is contradictory to the upward trend in natural gas sales prices over the same period), while the maximum capacity-release amounts have steadily increased since 2000-01.

Figure IV-3. Winter Capacity Releases



c. SJG's retention of capacity in the amounts it has accumulated creates a barrier to competition in its service territory.

Many of SJG's capacity-release transactions, particularly the annual and seasonal ones, involve a relatively small number of counter-parties. Moreover, SJG negotiates virtually all its releases privately. It posts only some upstream capacity on pipeline bulletin boards, thereby making it openly available to the broadest set of potential counter-parties.

Liberty has no first-hand knowledge of whether other suppliers or gas customers have tried to obtain pipeline capacity from the Company, or what conditions the Company might have attached to any releases. In interviews with representatives of SJG's industrial customers, and of marketers active on SJG's system, both complained of a lack of access or restricted access to the

capacity. It is clear, in any case, that the Company's affiliates SJRG and SJE conduct both wholesale and retail gas purchases and sales in the service territory. The potential for favoritism to an affiliate underscores the need for attention to the matter of what capacity SJG holds and how it uses it for primary and secondary (remarketing) purposes.

d. SJG's level of pipeline capacity, together with its nontransparent remarketing approach, inhibits the competitive market and provides inherent advantage to affiliates.

As described previously, SJG holds a substantial amount of capacity that it has obtained in the primary market. What SJG has marketers cannot get, other than through SJG. This factor can prove significant in a supply-constrained market. When SJG makes that capacity available to others through remarketing, it does not simply make it available as releases to the secondary market. SJG decides when and how it will remarket those assets.

The company's remarketing of its assets is not open and transparent. It does not post on pipeline bulletin boards, and makes only general statements of availability on its website. As Liberty's companion reporting about its examination of compliance with *EDECA Affiliate Standards* concluded, SJG does not provide the details that would enable third parties to assess the economics of potential purchases from SJG in a transparent manner. SJG in summary does not take significant initiative in notifying potential customers of its availability in any detailed, specific way. SJG personnel advised Liberty that other parties know that SJG has capacity and know to call the Company.

e. SJG's transaction tracking capabilities are not sufficient; SJRG's transaction tracking is sufficient.

SJG's sales and capacity release database is capable of performing many of the functions that SJG's gas supply and off-system sales operations need. However, SJG needs to record purchases into a more useful system than a monthly Excel file. SJG should record gas purchases in a similar manner to the way that it records sales transactions. Currently, SJG's information will not allow for a linking of any purchases that are made in the process of conducting an off-system sale. The current method also raises concerns about the sufficiency of controls.

E. Recommendations

The question of the size of SJG's capacity releases is directly linked to the design and size of its capacity portfolio. Recommendations addressing that issue are presented in Chapter III. The recommendations here address the conduct of the secondary-market program.

17. Make several key improvements to SJG's transaction-recording systems.

These improvements should include a synchronization of the processes for inputting sales and purchase transactions, installing audit functions to track changes made to transaction information, and installing layered access to the system. This can be accomplished by extensive updates to the current system, or implementing a new system with capabilities similar of the RADAR system that is used by SJRG and SJE.

SJG also needs to incorporate an *audit* function that will memorialize any changes made to data inputted into the system. SJG management will then have the ability to review any changes made to important deal variables, most importantly counter-party, price and volume. The database should also include a Trader ID column to indicate which trader is making each deal. Layered access to the database should also be incorporated, allowing SJG personnel access only to those functions that are necessary to each individual.

V. SOLR Considerations

A. Background

Liberty understands that there has been extensive testimony and discussion in several recent SJG regulatory proceedings on the subject of the supplier-of last-resort (*SOLR*) issue. Absent any action to the contrary by regulators, utilities remain the suppliers of last resort in their service territories. While nominally this means that a utility must stand ready to provide gas for all customers on its system at all times, the reality is not so simple. The largest customers, consisting generally of industrial companies, generally stopped taking supply from their LDCs years ago. Utilities cannot realistically expect to procure firm supply for such customers without a long lead time, and even then, it is questionable. Those customers, their utilities, and regulators have adjusted to this reality. Most utilities are no longer expected to and do not maintain assets to provide help to those customers, should their own supply arrangements fail. Some utilities offer a tariffed backup service to large customers, and make a specific charge for that service. However, as a rule, the largest customers do not pay the utility for supply and transportation assets.

At the other end of the spectrum lie residential and other human-needs customers. Regardless of their sources of supply, be they utility or marketer, the LDC generally retains responsibility to ensure that these customers will always have gas. Somewhere in between fall commercial customers. Generally, the larger ones have been sourcing their own gas for quite some time, and do not return to the utilities for supply. To the extent that there is an occasional return to the utility, Liberty is not aware of any instance where finding the supply has been an issue. Pricing, however, has often been a different matter. Some commissions have required returning large customers to pay market prices; *i.e.*, not to draw benefit from or arbitrage the differences between utility prices for supply customers and market prices. Liberty's general observation about the functioning of competitive markets alongside continuing SOLR responsibilities is that utilities have used reserve margins and market responses to handle the issue of customer return as retail competition has evolved.

The introduction of *retail choice for all* programs has introduced another level of complexity. In addition, as customers, providers, and regulators have become more comfortable about reliability, more focus has come to the question of who pays for the cushion that SOLR provides. As substantial numbers and portions of the load migrate to marketers, two related questions become more prominent:

- Who makes the economic commitments necessary to provide SOLR resources?
- Who ultimately bears the cost of those resources?

The LDC often provides the resources; however other actual or theoretical options exist; *e.g.*, asset pooling, requiring marketers to make an affirmative showing that they have firm supply to the city gate available, and contracting SOLR or backup services. Similarly, with respect to price, the utility may carry the full cost (generally for inclusion in a mechanism like BGSS in New Jersey), it may make charges on a *pro-rata* basis to marketers through a tariff charge, or it may allocate costs as part of a pooled charge.

B. Findings

1. Maintaining SOLR Supply Assets

South Jersey Gas maintains the assets as the SOLR for its customers. Until recently, SJG designed its portfolio of assets to allow it to back up all of its customers, including the industrial users, whether the utility or a marketer provided supply to them. Beginning with the 2004 – 2005 BGSS filing, SJG decided that it was no longer necessary to back up the industrial customers, and began to exclude their supply requirements from its design-day calculations. This change in strategy immediately reduced SJG's design-day requirements by approximately 38,000 Dth.

SJG also decided that for portfolio-design purposes it could rely partially on the supplies provided by marketers to residential and small commercial (RSG and GSG) transportation customers. The Company needed to identify the portion it deemed prudent to eliminate from calculations of what the utility might ultimately have to supply should marketers turn back customers. In the winter of 2000/2001, retail marketers found that they were unable to compete with SJG's price for system-supply service. As a result, marketers turned back a substantial number of customers to SJG for service at BGSS prices. SJG calculated that the actual turnbacks comprised about 41 percent of the load. SJG therefore has recently included 59 percent of marketer deliveries in its design-day analyses. The 59 percent is of the marketers' average (not peak) daily delivery requirement. This equates to some 51,000 Dth, which, when added to the large-customer design-day requirement, reduces SJG's design-day requirement by about 89,000 Dth, or some 17 percent.

SJG has continued to hold all of the same assets, even after making this substantial design-day reduction. SJG includes the costs of SJG's supply assets in BGSS rates, thus making them customer costs. SJG remarkets this additional increment of capacity, as it does others, through off-system sales and capacity releases. The BGSS calculation credits customers with some, but not all, of the revenues gained from such remarketing. (The sharing formula allows SJG to retain a portion of these margins). BGSS customers therefore bear two types of cost risk, to the extent that SJG may hold assets that exceed the amount required to serve them:

- The risk that not all capacity will be remarketed
- The risk that a substantial portion of the capacity will be remarketed at costs less than what it cost SJG.

These risks must not be viewed statically. They are dynamic; a utility that does not have an asset has avoided all of the costs that having it would have created. However, once a utility has acquired an asset, it is not necessarily easy to dispose of it immediately at full acquisition cost.

The Company's recently-developed 10-year forecast of peak-day capacity requirements assumes some level of deliveries by third-party marketers serving customers behind the Company's city gates. This forecast assumes that LVS customers receive their gas from their non-SJG suppliers on the peak day, as do customers in the Company's CTS and LVCS rate classes. The forecast also assumes that RSG-FT and GSG-FT customers receive from their non-SJG suppliers 58.6 percent of their peak-month average daily load.

These assumptions have a sizeable impact on the Company's requirement for peak-day supply capacity. The table below illustrates this effect by comparing the old and new forecasts for 2004-05. As the table shows, these assumptions reverse the Company's peak-day capacity availability in that year from a deficit of 113,246 Dth/day to a surplus of 13,398 Dth/day.

Table V-1. Old vs. New Peak-Day Forecasts for 2004-05

Item	Old	New
Full sendout requirements (sales and transportation)	551,701	529,261
Design-day pipeline capacity entitlements	220,547	220,547
Deliveries from storage	142,908	142,908
Company peaking resources (LNG)	75,000	75,000
Deliveries by third-party marketers	0	104,204
Difference between requirements and supplies	(113,246)	13,398

Dth/day

The new forecast eliminates a contingency reserve that was determined to be redundant. This new 10-year forecast shows that the modest peak-day capacity surplus in 2004-05 will become a deficit by the winter of 2006-07, as SJG's load grows. Continued load growth would increase the peak-day capacity deficit to 84,373 Dth/day by 2013-14.

SJG's addition of 105,000 Dth/day of capacity on Transco's Central New Jersey Expansion Project also has a substantial impact on the Company's requirement for peak-day capacity. That project is scheduled to enter service later this year, but it was not included in the pipeline capacity entitlements presented in the table above. That additional capacity will bring SJG to 107,386 Dth/day of peak-day supply capacity available for release or for interruptible or off-system sales in the winter of 2005-06. That amount will decline but remain positive by 2013-14 (to about 20,000 Dth/day; 105,000 minus 84,373), if the Company's load grows as forecast, and if third-party suppliers deliver as assumed in the Company's new forecast.

2. Margin Sharing for Remarketed Assets

Interruptible sales offerings, transportation service, and remarketing of occasionally or routinely available pipeline and storage assets through the secondary market have been growing as regulators have allowed market opening in the natural gas industry. Early in market evolution, Commissions had few sound bases for establishing benchmarks for measuring whether LDCs were doing all they reasonably could to market interruptible services and to remarket assets through capacity releases and off-system sales. Many utility regulatory commissions therefore came to recognize the wisdom of providing incentives, beyond traditional rate-of-return regulation (or sharing of *profit* above established return levels), to motivate utilities to pursue remarketing more actively. Margin-sharing formulas in the range of 80/20 to 90/10 (ratepayer/shareholder) became common in many jurisdictions.

It became generally understood, as secondary markets matured, that utilities would usually have a material level of available assets, except in the event of a peak period. There also remained the traditional and appropriate concern about avoiding undue excess at peaks. The industry then began to witness revisions intended to refine those margin-sharing formulas, often on a case-by-case basis. For example, a rate case order might designate the first x dollars to ratepayers, the

next equal amount to shareholders, and then sharing beyond that. The country has seen many variations on this theme.

3. The PSE&G Asset Transfer Model

South Jersey Gas has considered a filing with the BPU using the PSE&G asset transfer model. By Order issued April 17, 2002, in Docket GM00080564, the BPU approved, with modifications, a proposal by PSE&G to transfer its pipeline transportation and storage contract assets to an affiliate (*Newco*). Some of the key provisions of that order included:

- Transportation and storage contracts transferred at current contract costs, with Newco at risk for all contract costs
- Initial and permanent capacity-release programs available to marketers.
- A city-gate storage and redelivery program available to marketers
- Margins from off-system sales credited to residential customers pursuant to existing sharing
- Newco to provide full requirements for PSE&G BGSS customers at market prices
- An initial term through March 31, 2004, with a three-year extension right by PSE&G
- Newco limited to a return of no more than 50 percent of capacity and commodity contracts in the event of a termination
- Newco performance warranty.

SJG considered making a similar filing with the BPU several years ago. The Company put the possibility on hold, however, when it filed its most recent rate case. The filing remains an option, but is not under active preparation, study, or consideration, at present.

C. Conclusions

- a. Planning to accommodate marketer turnbacks of customers to SJG substantially influences the price that SJG's supply customers; *i.e.*, those who do not take supply from third parties, must bear.**

SJG has responded in an extremely conservative and expensive way by retaining the entire SOLR burden and associated costs, which it passes on to customers who have not chosen suppliers other than SJG. These customers therefore pay higher rates for a back-up service that benefits those who have switched suppliers.

This practice has a material impact on prices for SJG's system-supply customers. It also produces free backup service to other customers, and provides a source of revenue to the shareholders through the margin-sharing formula.

- b. SJG's system-supply customers subsidize the development of competition in its territory because of the Company's commitments for meeting SOLR requirements.**

SJG maintains supply assets to back up all customers, with the following exception, which SJG recently made. The utility's design-day calculations now assume that marketers will make 100 percent of deliveries to their industrial customers and 59 percent of deliveries to their residential and small commercial customers (RSG-FT and GSG-FT rate classes). SJG still maintains the

same asset pool despite these reductions in the load it assumes it must be prepared to serve. The inclusion of the costs of the back-up assets in rates for SJG supply customers in turn makes it easier for marketers (including SJG's affiliate, SJE) to attract SJG supply customers by offering lower rates. This incidental effect has the benefit of encouraging customers to move away from utility supply, which is at least consistent with a goal of promoting competition. BGSS prices made higher by reserve capacity improve the ability of marketers to compete on price. However, there remains the question of the degree to which this goal should derive support from a strategy that makes one group of customers absorb costs where the primary benefits of incurring them go to another group of customers. Further, at some level of migration it becomes unsustainable.

Whatever view one takes of the balance between market-opening and cross-subsidization goals and policies, however, it remains true that SJG's approach to the SOLR issue brings higher costs on a total-market basis, because it maintains under-utilized assets. In essence, SJG has been providing backup service for all competitive customer classes, while requiring system-supply customers to bear a disproportionate share of the costs.

A further subsidy to the competition program exists in how SJG addresses marketer DCQs. Marketers for the residential and commercial aggregated customers are required to bring in a stated DCQ. It may vary from month to month, but within a given month, it remains constant every day. This approach produces the equivalent of 100-percent-load-factor markets; *i.e.*, an ideal type of customer who uses the same quantity of gas every day. The supplier therefore only has to contract for a fixed, known quantity of gas every day. The marketer avoids the obligation to deal with daily peaks and valleys; *e.g.*, by putting gas into storage, taking it from storage, or buying swing services.

SJG's approach requires it to take on the burden of addressing all the swings around the DCQ. In turn, this SJG obligation becomes one whose costs are also borne by SJG's system-supply customers. These system-supply customers already bear SJG's costs for providing these services for themselves, because their own usage varies as well. The issue here is that system-supply customers must not only bear their own costs, but must bear them for another class as well; *i.e.*, those who take supply from marketers.

c. SJG's commitments in support of SOLR requirements have also provided a significant opportunity for shareholders.

This opportunity arises because SJG has not had to make significant use of its reserve assets to serve system-supply customers, including both those who remain with SJG long term, and those whose marketer (including SJG affiliate, SJE) occasionally turned them back to SJG. The effect of this opportunity is significant. As discussed in the previous chapter, Liberty found SJG's total revenues from remarketing its reserve assets, primarily through off-system sales and capacity releases, appear high for a utility of its size.

Sharing mechanisms do provide incentives; some of those incentives, however, can become counter-productive. When shareowners have the opportunity to share in the remarketing of reserve assets, they also have an incentive to acquire more of those assets than they might otherwise. Rates recover all of costs for those assets. Regulatory commission examination of the prudence of portfolio design and assembly mitigates this incentive somewhat, but not entirely.

To the extent that an LDC acts on such a counterproductive incentive, the result is a net increase in customer costs, not the net decrease intended. By definition, the portion of the portfolio that exceeds needs will cost customers money when 100 percent of the costs go to customers, but only an amount discounted by the sharing fraction nets against those costs.

SJG has had access to margin-sharing for more than ten years. For the 1992-1993 gas year, SJG received the first \$3.9 million in margins from interruptible sales and transportation, followed by an 80/20 sharing of additional margins. The SJG share increased to a high of \$7.8 million from interruptible sources as well as capacity releases (other than to its firm service customers) and off-system sales before the threshold was reset at zero in July 2004.

d. The asset-transfer model would expose South Jersey Gas to significant price and supply-security risks.

The transfer that SJG has contemplated would put ownership of the supply assets and the responsibility for delivery of the supply in the hands of a non-utility affiliate. Further, after several years, there is no obligation for the affiliate to serve the utility. The underlying assumptions are that:

- There will be a competitive market and the utility will have a choice of suppliers for BGSS service
- The vast majority of customers will have migrated from BGSS service to competitive suppliers
- Both these assumptions will prove to be the case to some extent.

Liberty did not examine the context within which the PSE&G decision was made. It is clear, however, that competition in the national, regional and local markets has not developed as expected, even across the past two or three years. Pipeline capacity and storage in the Northeast and Mid-Atlantic regions must still be considered a limited and perhaps scarce resource in many areas. Should an SJG affiliate have the right to decide to market its assets to other parties after the initial requirement period has elapsed (and in the case of extreme circumstances, even during that initial period), it could undertake a number of actions that could leave SJG competing for scarce resources. Examples of those actions include:

- Use of a major portion of assets for new electricity generation
- File for bankruptcy (as a number of wholesale suppliers have done).

There are no guarantees that other sources of supply would be available to the utility or that it would have first call on the assets in a bankruptcy proceeding. Liberty considers it likely that gas would still be available to the utility; however, in a market characterized by capacity constraints, the price could be substantially higher as the utility competes with others for resources that it used to own. Liberty therefore concludes that the sale or transfer of needed utility pipeline capacity and storage assets would bring undue risk. This conclusion, however, does not necessarily apply to an asset-management or agency-type arrangement with a third party, under which SJG would retain title to the assets and the ability to free itself from a disadvantageous relationship within a reasonably short time.

D. Recommendations

18. Address alternative means for dealing with the Company's reserve capacity in the second phase of SJG's rate proceedings.

Liberty understands that SJG remains engaged in the rate design phase of the rate case filed in the summer of 2003. A reading of the settlement made in Phase I of that proceeding and limited discussion with SJG's officers leads Liberty to expect that SJG will propose keeping its capacity portfolio, including the capacity on Transco's expansion project, but providing specific releases of capacity to certain customers, or groups of customers, under particular conditions.

Liberty believes that SJG should also consider other options. Presented below is a brief discussion of possible alternatives, along with summaries of considerations associated with each option. Liberty is not providing a detailed discussion of either the Company's proposals or suggested alternatives; any such discussion is beyond the scope of our assignment. Moreover, the Phase II proceeding in the Company's rate case is the proper forum for that discussion. This report simply lists a number of possible alternative approaches.

Adjusted SOLR Obligation

The parties would agree that the Company would be relieved of some part of its supplier-of-last-resort (*SOLR*) obligation, in exchange for adequate third-party supplier assurances of primary firm delivery rights to SJG's city gates. Alternatively, customers could subscribe to a back-up supply service that would provide supply if their suppliers failed. Under this option, the Company would have considerable excess supply capacity that it could sell off in a series of long-term, non-recallable releases.

The Company has concluded that its LVS, CTS, FES and LVCS customers are unlikely to return to system supply. Thus, unless those customers request (and pay for) a back-up service, there is no need for the Company to retain any supply capacity for them.

The RSG-FT and GSG-FT customers are more uncertain. In the near term, the Company is pretty sure how much of that load will buy from third-party suppliers, as it knows how many customers have contracted with those suppliers for their gas. The uncertainty comes in projecting those customers' behavior over time; as discussed in the chapter on gas transportation, marketers may reduce their offerings in response to market developments, or they may add customers through aggressive marketing campaigns.

Liberty observes that, with the addition of the new Transco capacity, and acknowledgement by the Company that it need not reserve capacity for certain classes of customers, a significant amount of capacity can be disposed of through long-term, non-recallable releases. For example, if the parties could agree with the Company's assumption that no more than 41.4 percent of the average daily load in the RSG-FT and GSG-FT categories would be likely to return to the utility for sales service, then the 20,000 Dth/day of capacity mentioned above as not needed through 2013-2014 could be placed in a nine-year, non-recallable release. Similarly, backing out two years of market growth at 10,000 Dth/day per year, another 20,000 Dth/day could be placed in a

seven-year, non-recallable release. Another 20,000 Dth/day could be placed in a five-year non-recallable release. And so on.

Considerations for:

- This option would reduce the burden on system-supply customers of the extra capacity costs
- It would retain the Company's expertise in administering its secondary-market program.

Consideration against:

- Leaving the reserve capacity with SJG would not resolve concerns about competition.

Additional considerations:

- Mandatory capacity assignment to third-party suppliers is a sub-option here
- Such an option would present problems in administration; *e.g.*, which capacity should go to which supplier
- Moreover, the reserve capacity would remain with SJG
- A permanent release of reserve capacity would require SJG and its customers to reach a consensus about which capacity to release
- Moreover, if the Company's load continues to grow, a permanent release might result in a search for additional capacity later, when capacity costs might be higher.

The PSE&G Model

As noted above, in August 2000, the BPU approved Public Service Electric and Gas Company's (PSE&G's) proposal to transfer its rights and obligations under its capacity contracts and operating agreements to a non-utility affiliate. That affiliate, in turn, entered into a full-requirements contract with the utility, pursuant to which it would provide the gas-supply resources necessary for the utility to provide Basic Gas Supply Service (BGSS). The affiliate assumed all responsibility for the cost of the various gas-supply resources in the transferred portfolio, and assumed the risk for recovering the costs of those resources. The affiliate was authorized to enter into such other gas-supply and capacity-release transactions as it saw fit in pursuit of recovery of the costs of the supply resources in the portfolio.

Considerations for:

- This option would relieve SJG's customers of responsibility for recovery of the costs of SJG's supply-capacity portfolio
- The cost of SJG's BGSS would reflect the mix of gas-supply resources required to provide that service.

Consideration against:

- Transco's costs are lower than those of the other pipelines that serve the Northeast U. S.
- Because SJG's capacity portfolio contains a lot of Transco capacity, it may now be worth more than it costs.
- If so, this option would produce at customer expense a potential windfall to the SJG affiliate that receives the portfolio.

- This option would further solidify the SJI companies' control of SJG's capacity on Transco.
- To the extent that control of that capacity, particularly the capacity on the Trenton-Woodbury Lateral, is causing problems in SJG's service territory, this option could magnify those problems.

External Asset Manager

SJG should consider the use of an external asset manager. Asset managers can often increase net proceeds for their customers by:

- Engaging in types of transactions (such as storage arbitrage strategies) not normally undertaken by LDCs operating their own portfolios
- Realizing synergies by combining an LDC's assets with other assets under management.

A number of asset-management firms now compete for the right to manage utility companies' assets, generally in return for a share of the proceeds of the asset-management activity. Asset managers generally operate under one of two alternative types of arrangements. One alternative involves payment of a fee by the manager, who then takes control of the asset portfolio and works to maximize returns. Sharing returns may be involved above some threshold level. The other principal arrangement is an alliance. Under this type of arrangement, the asset manager and the LDC work together in pursuit of maximum returns. SJG has experience with both types of arrangements. Which alternative is better is often determined by whether the host LDC has in-market contacts and expertise that an asset manager considers valuable.

Considerations for:

- Hiring an external asset manager would solve two problems that plague SJG's current secondary-market program.
- It would reduce the burden of extra capacity costs on SJG's system-supply customers, with no loss of supply reliability.
- It would eliminate concern that SJG is managing its supply-asset portfolio in ways that provide advantages to its affiliates.

Considerations against:

- Asset managers are often thinly capitalized, especially when compared to a public utility company.
- Special care is required in selecting an asset manager, and in negotiating sufficient financial support to ensure performance.

Hybrid Options

Liberty believes that a hybrid can be developed that addresses all major concerns. Such a hybrid would have the following features:

- SJG would continue to manage a supply portfolio sized to the requirements of its system-supply customers. A secondary-market program for those assets would be part of that management.

- Third-party marketers serving firm customers behind SJG's city gates would have to provide proof of primary firm delivery rights to SJG's city gates or subscribe to a back-up supply service. The marketers could take a proportional assignment from SJG or obtain their capacity elsewhere, but delivery rights would have to be primary firm at SJG's city gates.
- The remaining capacity in the current portfolio would be put out for bid to external asset managers. The assets to be put out for bid would be adjusted annually to reflect changes in the loads of the utility and third-party marketers.

Making this system work would require some changes to the Company's third-party transportation program, primarily to put supplier choice on a regular calendar. The necessary changes are discussed later in this report, in the chapter addressing the Company's third-party transportation program.

19. Require all firm customers to share in the cost of security of peak-day supply.

For the competitive market to develop properly, all firm customers should share equitably in the cost of ensuring that capacity is available on peak days. Practically, this means that marketers should be required to hold firm winter supply to the city gate. This may be accomplished through purchasing utility assets, purchasing utility backup service or a suitable demonstration that a marketer's other supply sources are reliable.

One of the options available to utilities has been requiring marketers to demonstrate firm, primary-delivery point winter capacity to the city gate(s), so that the utility may be reasonably certain that the marketer has the assets to satisfy the SOLR obligation for its customers. However, this approach has involved some uncertainty. If a marketer withdraws from the market, the assets it holds may be diverted elsewhere. A recent FERC ruling appears to address that difficulty, however. A FERC Order issued January 24, 2005, responded to a request for rehearing with respect to the release of interstate capacity in Georgia. The FERC ruled that its regulations:

...permit a state commission to condition a marketer's participation in a retail unbundling program on its agreeing in advance to a prearranged leaseback to the LDC ...if the marketer became unable to fulfill the needs of the retail customers and the LDC needed the capacity to meet its obligations as the supplier of last resort.

As with the previous recommendation, the Phase II proceeding would be a logical forum to address this issue.

20. Establish a mechanism for making marketer assets available to continue serving customers upon market exit or bankruptcy.

As distinct from meeting peak-day requirements, the SOLR obligations require a level of protection against marketer withdrawal from the market and failure to supply its customers, whether for voluntary or involuntary reasons, such as bankruptcy.

To respond to marketer failure or withdrawal from the market, there needs to exist a mechanism to allow the marketers' assets dedicated to SJG customers to remain available to those customers after they return to SJG. One option would rely on the FERC ruling cited above, wherein a marketer may be required to agree to a prearranged leaseback of capacity if it withdraws from the market. Such a mechanism may not be foolproof; therefore, it can be supplemented by some level of reserve margin and the ability of SJG to purchase gas at market and by partial reliance on the marketplace. For several years, SJG has relied upon the marketplace to handle colder-than-normal weather, as it has remarketed a substantial amount of the assets that it would need to meet the related load. In addition, SJG has expressed the firm belief that "gas is always available at a price" at its city gates.

VI. Services and Pricing

A. Background

This chapter addresses the following topics:

- SJG's tariff service classifications and the general billing elements of each
- The history and development of the Basic Gas Supply Service (BGSS) rate
- An analysis of the components of the BGSS rate
- How the BGSS rate and its components compare to market rates.

B. Findings

1. SJG's Customer Classes

SJG provides firm and interruptible sales and transportation service to residential, commercial, industrial, and electric-generation customers under a number of tariff classifications. The following list summarizes the significant classifications and their key parameters in order of increasing usage.

Residential Services: Residential customers take service under the *Firm Residential Sales and Transportation Service (RSG)* classifications. The tariff subjects them to a customer charge and a delivery charge, as well as to a number of riders:

- Rider A: BGSS charge (sales only)
- Rider C: Transportation Initiation Clause (transportation only)
- Rider E: Societal Benefits Clause
- Rider F: Temperature Adjustment Clause
- Rider H: Economic Development Rate Clause
- Rider J: Balancing Service Clause (transportation only).

SJG also has two other residential classifications: *Residential Air Conditioning* and *Yard Lighting Sales Service*; each has very small numbers of customers and volumes.

General Services: Small commercial and industrial (C&I) customers take service under the *Firm General Service (GSG)* and *General Service – Large Volume (GSG-LV)* tariff classifications. The GSG class consists of customers that do not meet the requirements for any of the larger volume C&I classifications. GSG–LV customers are those with annualized usage of 10,000 Dth or more per year. Both classes pay a customer charge and a delivery charge, and are subject to riders, which may be different for the two classes:

- Rider A: BGSS charge (sales only)
- Rider B: Firm Market Adjustment Clause
- Rider C: Transportation Initiation Clause
- Rider E: Societal Benefits Clause
- Rider F: Temperature Adjustment Clause

- Rider H: Economic Development Rate Clause
- Rider J: Balancing Service Clause (transportation only).

Comprehensive Transportation Service: CTS service applies to all customers with firm contract demand and annual average daily consumption of 100 mcf (approximately 36,500 mcf per year) or greater. CTS customers pay a customer charge and a delivery charge, the latter of which has demand and volumetric components. The following riders and other special provisions apply to this class:

- Rider B: Firm Market Adjustment Clause
- Rider E: Societal Benefits Clause
- Balancing provisions as stated in tariff.

Large Volume Service: Firm Sales and Firm Transportation Service Large Volume Service (LVS) applies to all customers having a firm contract demand and an annual average daily consumption of 200 mcf (approximately 73,000 mcf per year) or more. LVS customers pay a customer charge and a delivery charge, the latter of which has demand and volumetric components. The following riders and other special provisions apply to this class:

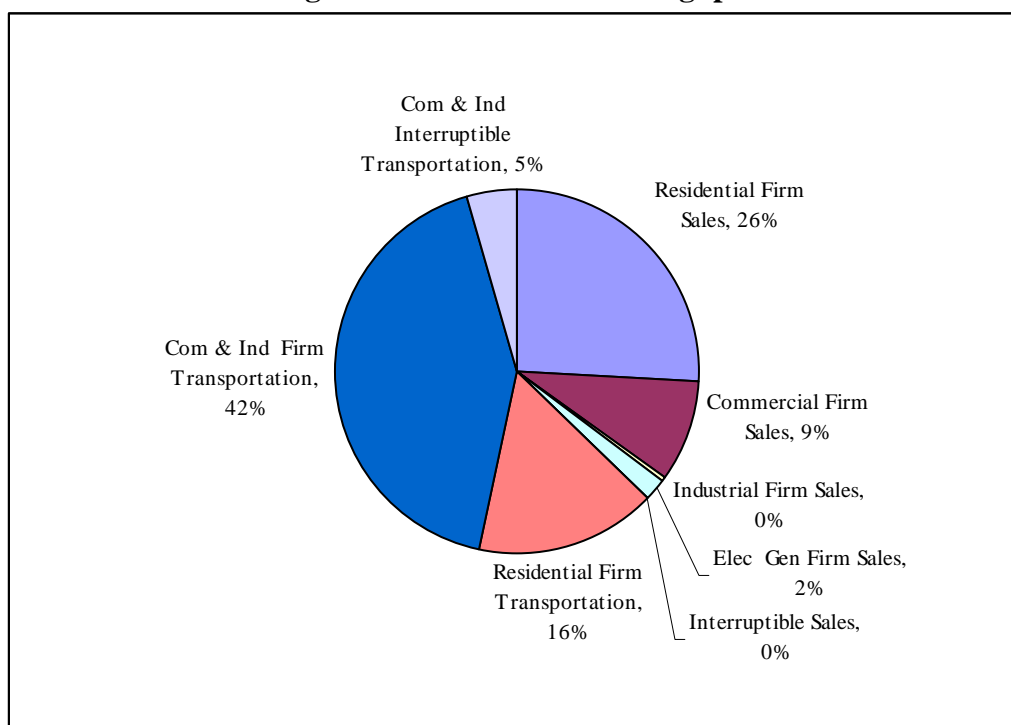
- Rider A: BGSS Clause (sales only)
- Rider B: Firm Market Adjustment Clause
- Rider E: Societal Benefits Clause
- Rider H: Economic Development Rate
- Rider I: Balancing Service Clause.

Electric Generation Services: SJG offers sales and transportation service under the *Firm Electric Service (FES)* tariff classification. An FES customer must have a winter contract daily demand of 1,000 mcf/day or a summer contract daily demand of 2,000/day or both. The tariff includes a monthly demand charge and a volumetric charge, which differ for summer and winter. SJG recovers the commodity costs for FES sales customers through the *Firm Market Adjustment Clause (FMAC)*, which includes the *Firm Market Volumetric Clause* described in Rider B. SJG implemented the FMAC in July 1986 for application in fuel-competitive markets. The clause includes the monthly direct purchase prices of gas supplies purchased for and allocated to those customers. SJG serves one customer, [REDACTED], under this tariff classification. SJG also has a tariff classification for cogeneration customers, but no customers take service under it at this time.

Interruptible Services: SJG offers *Interruptible Gas Sales Service (IGS)*, at a monthly rate set at a reference price of Number 2, 4 or 6 oil, depending on the customer's alternate fuel, plus a contribution of at least 10 cents per Dth. Interruptible sales customers also pay the *Societal Benefits Clause* (Rider B). SJG also offers *Interruptible Transportation Service (ITS)*, which includes a monthly service charge and a transportation charge depending upon the customer's service classification.

The following table shows the relative proportions of the company's throughput broken down by tariff classification.

Figure VI-1. SJG 2004 Throughput



2. The Basic Gas Supply Service (BGSS) Model

LDCs commonly use gas cost adjustment mechanisms to pass gas costs through to customers. Most commissions require a direct pass-through of gas costs to customers without mark-up, although there have been minor exceptions for incentive purposes or the occasional pilot project. Many factors have made the administration of these mechanisms difficult for regulators, customers, and LDCs. These factors include the volatility of gas prices, the need to bill customers before final prices become known, the vagaries of weather (which affect volumes, which in turn affect prices), and the need for regulatory review. Over the years, regulatory commissions and utilities throughout the country have tested and used a variety of methods for pricing gas to customers. This range of methods exist under a variety of names as well, with common ones including gas cost adjustments (*GCA*s), gas adjustment clauses (*GAC*s), purchased gas adjustments (*PGA*s), or something similar.

Common to all of these mechanisms is some type of price forecast, for periods ranging from a month to a year ahead, and one or more true-ups to reconcile the difference in prices between forecast and actual costs during or at the end of the forecast period. Typically, an LDC then refunds or bills over- or under-collections to customers during a subsequent period. Such periods range from the next month to the next year. Some utilities and jurisdictions include a dead band. If the ultimate difference between forecasted and actual results falls within this band, then customers receive no refunds or supplemental charges. Overlaid onto reconciliations of this time are other adjustments. They may include:

- Pipeline refunds (which may span a period of several prior years)

- Customer share of interruptible sales, off-system sales, capacity release margins, or other margin sharing devices
- Occasional incentive mechanisms
- A variety of other charges regulators may choose to pass through the gas adjustment mechanism; *e.g.*, cost recoveries or refunds in lieu of general rate increases or decreases.

3. Prices charged by other sellers

Utility or marketer hedging policies and activities may significantly affect its cost of gas. For many years, storage has operated as a “natural” hedge. Utilities injected gas into storage during the summer when demand and wellhead prices were low, and removed the stored gas during the winter when demand and wellhead prices were high. More recently, the seasonal price arbitrage effect has diminished substantially with the increase in gas-fired generation and changes in the marketplace, but remains a factor in gas prices. Financial hedges have become much more common in recent years. Securing a gas futures contract or any one of a number of other financial products allows a purchaser to lock in a price level (either a specific price or a range of prices) for all or a portion of its requirements for a period of time that may extend from days to several years.

A purchaser’s approach to hedging depends on several factors; *e.g.*:

- Its appetite for risk
- The nature of its business
- The extent to which its customer base and demand are known
- To what extent it has a diversified customer base, which may allow alternative uses for gas if some planned demand does not materialize.

For example, a utility (assuming it acts prudently) has a high degree of certainty of recovering gas and hedging costs, regardless of price. A large, integrated marketer with a broad geographic and diversified end-use customer base may have a somewhat lower, but still material degree of certainty with respect to recovering its costs, although it may have less pricing flexibility. A small marketer trying to acquire or retain customers from a localized and relatively homogeneous customer base, however, faces much different circumstances. That marketer has neither the price flexibility nor the diversity of a large, integrated marketer. All other things equal, a utility or a large marketer are more likely to engage in hedging on a continuing, business-as-usual basis, while the small marketer is more likely to acquire hedges as he acquires customers.

C. Conclusions

- SJG’s tariffs have responded over the years as the industry has changed and rates, terms and conditions have adapted, but at the expense of technical consistency and clarity in some cases.**

As with most utilities, SJG’s tariffs are the product of years of changes and developments in the industry, in New Jersey, and at the Company. These changes have led to a number of administrative or technical anomalies, which is not uncommon. For example, some provisions express quantities of gas in thousand cubic feet (*mcf*), while others use decatherms (*Dth*). Some tariff classifications indicate that the Company *may* assess a late payment charge, leaving

discretion in cases where such a charge should either be assessed or not assessed. Other sections create confusion. For example, the GSG service classification, which typically serves small commercial customers, states that it applies to “All Commercial and Industrial Customers who would not qualify for any other rate schedule.” Thus, one must examine other tariff schedules to understand the GSG schedule.

b. SJG has adequately addressed potential bypass issues by entering a number of negotiated (*flex*) rate contracts, but has not documented its general policy or guidelines.

LDCs generally consider negotiated contracts; *i.e.*, non-tariffed rates, when a large customer threatens to go leave the utility’s system. Customers have many reasons or options for leaving; *e.g.*, physical bypass (connecting directly to a pipeline, and bypassing the utility’s distribution system), switching to an alternate fuel source, moving out of the franchise area, or shutting down the business. In such cases, many utility regulatory commissions have applied the logic that, faced with the total loss of the customer’s usage, the utility and its other customers are better off if the customer stays on the system and pays a reduced rate, provided that the customer covers its variable costs and makes some contribution to fixed costs. A commonly used figure for minimum contribution, which SJG uses as well, is 10 cents per decatherm.

SJG has eight customers with negotiated-rate contracts, seven with large volume transportation customers, and one with a firm transportation customer. The utility individually negotiated each of them. SJG has no formal, written negotiated rate or “bypass” policy. This lack creates the potential for uneven treatment of customers, and places a heavier burden upon the individuals doing the negotiations.

c. SJG’s BGSS allows it to recover gas costs from sales customers and it identifies a *price-to-compare* for marketers.

The BGSS replaced the former *Levelized Gas Adjustment Clause (LGAC)* by BPU Order of January 6, 2003. The BGSS rate provides for a “periodic” pricing mechanism for all RSG (residential) customers and all GSG customers using less than 25,000 Dth/year. The BGSS monthly rate applies to all LVS, CS, LVCS customers and those GSG customers using 25,000 or more Dth/year.

For large-volume customers, SJG implemented a Monthly BGSS charge on March 1, 2003, and has since made monthly filings with the BPU. For smaller-volume customers, SJG must make periodic BGSS filings by June 1 of each year, with the new rate to be effective on or about the ensuing October 1. SJG filed its first BGSS rate for the 2003-04 gas year in May 2003, with an update in July. SJG’s second BGSS rate filing, for the 2004-05 year, came in June 2004. SJG based its BGSS proposal upon 7 months of actual and 17 months of estimated data, and updated it during the course of the proceeding. The Periodic BGSS rate allows for two “self-implementing” rate increases by the Company, up to a maximum of 5 percent of the total average residential bill, on December 1 and February 1, and decreases, credits or refunds at any time, all subject to various notice requirements as specified in the tariff.

For the 2004–05 gas year, SJG’s proposed rate included the following components:

- Pipeline demand (projected based upon FERC filed tariffs and recently filed FERC rate cases)
- Projected recovery variances from the prior year's BGSS rate, with accrued interest
- A credit from the prior year's margin-sharing formula from off-system sales, capacity releases, and interruptible sales and transportation
- Projected commodity charges, based upon NYMEX "strip" pricing as of the end of May 2004 plus "basis," which reflects the cost of transportation between Henry Hub (the NYMEX reference point) and the points where SJG expected to buy its gas. Included in the commodity charges are gains and losses from the Company's hedging program, discussed in a separate chapter of this report.
- Projected LNG costs, based upon the NYMEX "delivered cost of LNG" price, plus transportation costs to McKee City
- Projected cost of a peaking service for the winter period.

SJG expected supplier refunds, which would otherwise be included, to be insignificant, and therefore valued them at zero in the calculation.

d. SJG's BGSS incorporates timing differentials and non-market price factors that make it not representative of market prices.

The BGSS calculation includes several components of gas costs that are not synchronized with the market price of gas, including:

- The cost of gas in storage, which reflects the cost when the gas was injected into storage over the summer period
- The NYMEX price, which is essentially a consensus forecast of the forward market.

The BGSS calculation also includes the following components, which are unrelated to the commodity cost of gas as defined by marketplace measures:

- Reconciliation of the prior year's gas costs, which can increase or decrease the price
- The netting of the company's hedging activities, which can increase or decrease the price
- Pipeline refunds, which would always decrease the price
- Ratepayer share of margins from off-system sales, possibly offset by other cost elements, which would decrease the price.

The following table shows, for example, the non-commodity related components in the 2004–05 BGSS filing. Negative numbers indicate a reduction to the BGSS rate.

Table VI-2. Non-Commodity BGSS Components

BGSS Cost Component	Cost
Undercollection from prior year	1.6
Net hedging gain	(1.3)
Pipeline refunds	0
Margins from OSS	(7.8)

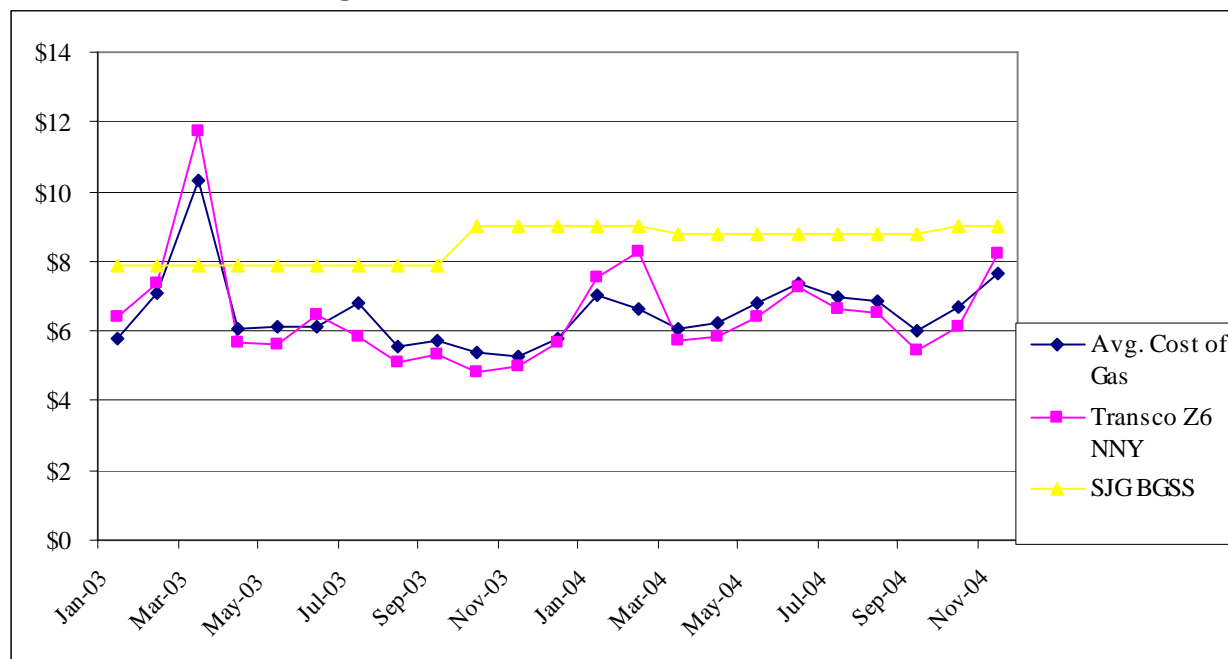
Costs are in cents per therm.

The above listing, while not complete, indicates a problem inherent in most utility commodity pricing structures; *i.e.*, when comparing them to market prices, although the two may often appear relatively close, they are not reliably comparable, particularly when the market prices are volatile.

Figure VI-3 shows the behavior of SJG's BGSS rate relative to market prices. The BGSS rate is plotted, along with the monthly Transco Zone 6 Non-New York price over the same time period. SJG's weighted average cost of gas (WACOG), including both demand charges and commodity costs, is also plotted for the same period.

The chart shows that the three prices move relative to each other. All three are reflective of gas costs delivered to SJG's city gate. The WACOG number contains costs incurred in acquiring the gas in a production area, and moving it to SJG's city gates. The BGSS rate also reflects the cost of gas delivered to the utility company's city gates. As discussed above, however, the BGSS rate includes several adjustments, including prior-period under-collections, gains or losses from that month's hedging transactions, credits from capacity-release and off-system sales revenues, etc. Finally, the Transco Zone 6 price is a market-area price for gas that can be delivered to SJG's city gates without additional cost.

Figure VI-3. SJG BGSS Rate vs. Market Price



- e. **The extra costs in the BGSS rate make it easy for marketers to beat most, but not all, of the time.**

Rather than buying gas in a production area and moving it to market via contract transportation (as the utility would do), marketers (including SJE) generally buy their gas supply in the market area, then have the gas delivered to the city gate. Thus the marketer's cost of gas looks like the Zone 6 price.

Comparing the three lines in the figure above shows that, sometimes the Zone 6 price is higher than the BGSS rate, but usually it is lower. Marketers try to buy gas for extended periods when they see the market price drop below the BGSS rate. Locking in that spread, through financial hedges, or buying for an extended period, is how a marketer (SJE, in this case) can offer a discount to the utility's BGSS rate.

Even if SJG could perfectly predict market prices in its BGSS filing, the other elements included in the calculation would make the BGSS rate different from the wholesale-market price. The rational strategy for a small marketer is to see what SJG BGSS price results from the filing and review process. Only then can a cautious marketer determine whether it will be possible to acquire sources of supply that will allow an opportunity to beat SJG's price. The marketer must acquire customers and supply more or less simultaneously on a rolling basis. Beating SJG's price appears to have been a centerpiece of the strategy of some of the major marketers in SJG's territory, including its own affiliate. In order to do that, a marketer must either assume the Company's BGSS filing is representative of what the BPU will approve, take the risk that it will not, or wait until the beginning of the heating season for the BPU decision.

Recent circumstances highlight the problems that the SJG BGSS cycle presents for marketers and for SJG's own supply planning. A number of the marketers, again including SJG's affiliate, South Jersey Energy, sometimes turn back thousands of mass-market customers to SJG. This situation occurred most recently at the beginning of this winter season (2004-05), when marketers found themselves unable to beat the SJG price, stopped acquiring new customers, and turned back large numbers of customers as their contracts expired. This cycle makes it difficult for marketers to operate on a planned, long-term basis; it is natural that they tend toward an opportunistic approach that is likely to cause market development in SJG's territory to experience rolling waves of increase or decrease in the number of customers served by marketers. In fact, a continuation of significant and unpredictable price volatility in the gas market may frustrate market-opening goals, given the low margins in the mass market compared with the costs of securing customers.

Two examples serve to underscore the market-development barrier presented by the operation of SJG's BGSS. During the winter of 2000 – 2001 and again during late fall 2004, gas prices spiked unexpectedly. Marketers, including the affiliate of SJG, could not prudently renew substantial numbers of their customers' contracts because they could not secure supply at rates competitive with those of SJG. Over the 12 months beginning June 2000, some 22,000 of the approximately 55,500 SJG's transportation customers, approximately 40 percent of the total, returned to the utility, primarily as a result of marketer turnbacks. In late 2004, South Jersey Energy (SJE), SJG's affiliate, again turned back some 8,000 of its customers to SJG for essentially the same reason.

The procurement of supply presents a major, but not the only, challenge to marketers. Other than transaction costs, which are very small, a utility's costs of attracting a BGSS customer is zero. First, the utility had all the customers to begin with; second, it incurs no marketing or sales costs for getting that customer to return; and third, the program is intended to be competitively neutral so that the utility has no incentive to attract BGSS customers. In fact, because of the

market dominance of its affiliate and the way it provides “supplier of last resort” backup, SJG may have an incentive to have customers migrate.

For marketers, on the other hand, the cost of acquiring a customer is a very significant, up-front cost of doing business. A marketer must attract the customer, overcoming the inertia of staying with the utility and the fear that somehow gas service may be less reliable. It is generally conceded that marketers must provide either a discount from the utility’s rate, or a service not offered by the utility. For example, SJE attracted most of its customers through offering a \$25 merchant gift card. SJE paid a sales firm only for customers actually acquired, at a rate of \$40 per successful acquisition. These expenditures gave it a total acquisition cost per customer of \$65.

Marketers tend to be unwilling to discuss their profit margins. As a rule of thumb, Liberty estimates that the annual margin available from serving a residential heating customer is \$50 to \$100. Thus, to the extent that SJE’s acquisition cost is representative, a marketer must hold a customer for a year in order to recover that cost.

D. Recommendations

21. Review tariffs for accuracy and consistency, and correct and streamline them.

Utility tariffs should accurately reflect the terms and conditions of service and should be as clear, direct, and understandable as possible. SJG should develop a schedule for reviewing and making *housekeeping* changes to the entire tariff over a reasonable period of time, to minimize the burden on its personnel and the BPU. The need underlying this recommendation is not major; it should be implemented as resources permit.

22. Develop procedures and ground rules for negotiating flex-rate contracts.

SJG should prepare internal procedures and guidelines for potential new contracts or renegotiation of existing contracts. This documentation should provide the general policy and framework for addressing requests. The goal is to provide as much structure and objectivity as possible, recognizing that requests like these will present unique and potentially complex factors.

LDCs face significant difficulty in responding to requests for flex-rate contracts. The utility must determine whether there exists real hardship, such as permanently closing a facility, shifting production outside the state, or connecting directly to a pipeline, as opposed to posturing in an effort to secure marginal changes in pricing. Clearly some level of documentation should be required from the applicant, short of producing undue burdens that may tend to discourage legitimate requests. And, it should not be assumed that the individuals who are experienced in negotiating such contracts will be available indefinitely.

VII. Transportation of Customer-Owned Gas

A. Background

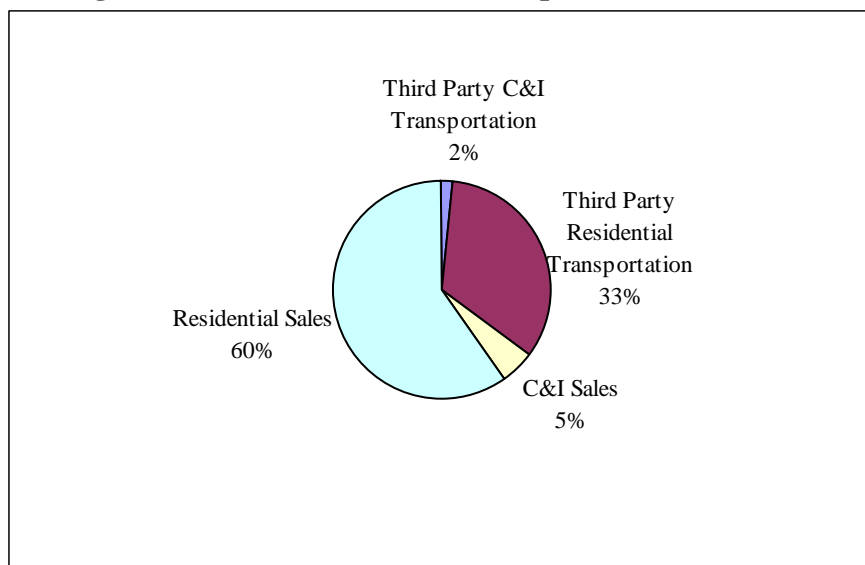
This chapter addresses the following topics:

- The current status of third-party transportation
- The marketer certification process
- A discussion of the small volume (aggregated) transportation market
- An analysis of the third-party transportation market
- Competitive issues in SJG's territory
- Operational issues.

The existing competitive market is a product of a 25-year period of evolution, involving the interplay of federal, state, utility, and supplier actions. The slow and gradual development of the large-volume market, the initiation of the pilot residential program, and the subsequent full residential unbundling all played out in public forums. These efforts have enabled competition to unfold with no significant supply disruptions. Reliability concerns have diminished because of the measured nature and rate of progress; but there has certainly been dissatisfaction with the slow pace of development of retail competition, particularly for smaller customers. It is helpful to remember that 14 years passed between the first pipeline transportation of customer-owned gas in 1979 and full pipeline unbundling in 1993. That market, as slow as its development has come, may have been less complicated. It involved fewer players, as it addressed the wholesale sector.

There exists a substantial level of third-party supply on SJG's system. The following table shows SJG's distribution of sales and transportation customers in September 2004.

Figure VII-1. SJG Sales and Transportation Customers



The actual customer counts at that time were:

Table VII-2. SJG Sales and Transportation Customers

Customer Type	Customers	Percentage
SJG Residential Sales	184,386	60%
Third Party Residential Sales	103,153	33%
SJG C&I Sales	15,336	5%
Third Party C&I Sales	5,300	2%
<i>Total</i>	<i>308,175</i>	<i>100%</i>

The BPU Energy Division certifies marketers (non-utility suppliers) under NJAC regulations. The BPU website offers all initial and renewal licensing documents and related instructions. A supplier seeking a license must file an application together with a \$250 non-refundable application fee and an \$800 Gas License Fee, refundable if the application is rejected. License renewals cost \$400 and suppliers must maintain a surety bond of \$250,000. Suppliers must also execute a standard, BPU-approved *Third Party Supplier Agreement* with each utility. Table VII-3 lists the marketers licensed to operate in SJG's territory.

Table VII-3. SJG-Territory Licensed Gas Marketers

Marketer	Classes Served
Amerada Hess Corp.	C/I
Conectiv Energy Supply, Inc., d/b/a Conectiv Energy	C/I
Cooperative Industries	C/I
ECONergy Energy Co., Inc.	R/C
End Users, Inc.	C
UGI Energy Services, Inc. d/b/a GASMARK	C/I
Hess Energy, Inc	C/I
Houston Energy Services Company	C/I
Metromedia Energy, Inc.	C/I
NATGASCO (Mitchell Supreme)	C/I
North Atlantic Utilities, Inc.	C/I
Pepco Energy Services, Inc.	C/I
PPL EnergyPlus, LLC	C/I
Select Energy, Inc.	C/I
South Jersey Energy Company	C/I
SJ Enertrade	C/I
Total Gas & Electric, Inc.	R
Woodruff Energy	R/C/I
Total	18

B. Findings

1. Third-Party Transportation Marketer Certification

Billing, account handling, customer information systems, and metering and metering systems difficulties can inhibit or derail a pro-competitive agenda if not handled properly. The BPU has created an effective platform for competition in its treatment of billing and metering issues. The BPU has avoided a morass of detail that it may never need to address, and SJG has used the resulting flexibility to create a system where these issues are not stifling the development of competition. Moreover, the purchase of receivables by the utility, with fair compensation for the transactions costs and the uncollectible risk, removes what could be a heavy burden from the marketers, who are less able to deal with it.

There are a large number of licensed marketers on the SJG system, typical of New Jersey and the country. However, as is also typical, only a few of those marketers serve residential customers. The 18 marketers licensed in the SCJ territory range from large, national wholesalers operating as part of integrated energy companies to small, regional operations. The following table shows the marketers licensed in New Jersey by service territory.

Table VII-4. Marketers Licensed in New Jersey

Marketer	SJG	ETG	NJN	PSE&G
Amerada Hess Corp.	C/I +	C/I +	C/I +	C/I +
Castle Power LLC			R/C/I +	R/C/I +
Conectiv Energy Supply, Inc. d/b/a Conectiv Energy	C/I	C/I		
Cooperative Industries	C/I	C/I		C/I +
ECONergy Energy Co., Inc.	R/C +	C/I +	R/C +	R/C +
End Users, Inc.	C +	C +	C +	C +
UGI Energy Services, Inc. d/b/a GASMARK	C/I +	C/I +	C/I +	C/I +
FirstEnergy Solutions				C/I
FSG Energy Services (WPS Energy Services)				C/I
Hess Energy, Inc	C/I +	C/I +		C/I +
Houston Energy Services Company	C/I +	C/I +		C/I +
Metromedia Energy, Inc.	C/I +	C/I +	C/I +	C/I +
Mx Energy				R/C +
NATGASCO (Mitchell Supreme	C/I +	C/I +	C/I +	C/I +
North Atlantic Utilities, Inc.	C/I +	C/I +	C/I +	C/I +
Pepco Energy Services, Inc.	C/I +	C/I +	C/I +	C/I +
PPL EnergyPlus, LLC	C/I +	C/I +	C/I +	C/I +
Select Energy, Inc.	C/I +	C/I +	C/I +	C/I +
Sempra Energy Solutions				C/I +
South Jersey Energy Company	C/I +	C/I +	C/I +	C/I +
SJ Enertrade	C/I +/0	C/I		C/I
Sprague Energy Corp.		C/I +	C/I +	C/I +
Texas Ohio Gas, Inc.		C/I		C/I

Tiger Natural Gas, Inc.				C/I +
Total Gas & Electric, Inc.	R +	R/C +	R +	R/C +
Woodruff Energy	R/C/I +	R/C/I +	R/C/I +	C/I +
<i>Totals</i>	<i>18</i>	<i>20</i>	<i>15</i>	<i>25</i>

“+” indicates a marketer actively signing up customers.

Note: In SJG territory, SJE is not shown as a residential marketer.

The next table removes all the inactive marketers and depicts only those designated as active; *i.e.*, accepting customers.

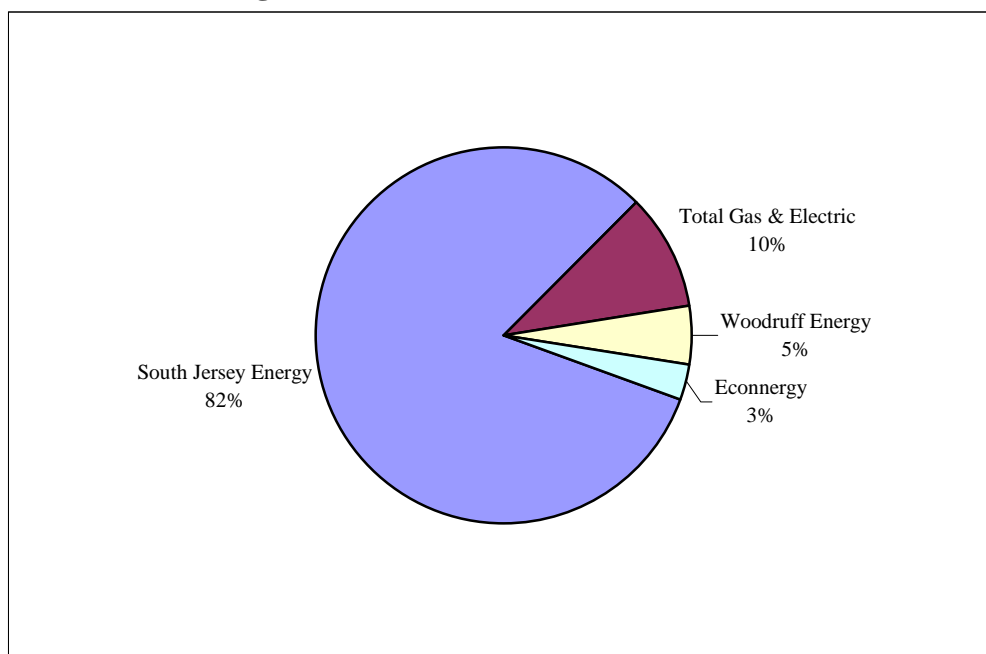
Table VII-5. Marketers Active in New Jersey

Marketer	SJG	ETG	NJN	PSE&G
Amerada Hess Corp.	C/I	C/I	C/I	C/I
Castle Power LLC			R/C/I	R/C/I
Cooperative Industries				C/I
ECONergy Energy Co., Inc.	R/C	C/I	R/C	R/C
End Users, Inc.	C	C	C	C
UGI Energy Services, Inc. d/b/a GASMARK	C/I	C/I	C/I	C/I
Hess Energy, Inc	C/I	C/I		C/I
Houston Energy Services Company	C/I	C/I		C/I
Metromedia Energy, Inc.	C/I	C/I	C/I	C/I
Mx Energy				R/C
NATGASCO (Mitchell Supreme	C/I	C/I	C/I	C/I
North Atlantic Utilities, Inc.	C/I	C/I	C/I	C/I
Pepco Energy Services, Inc.	C/I	C/I	C/I	C/I
PPL EnergyPlus, LLC	C/I	C/I	C/I	C/I
Select Energy, Inc.	C/I	C/I	C/I	C/I
Sempra Energy Solutions				C/I
South Jersey Energy Company	C/I	C/I	C/I	C/I
SJ Enertrade	C			
Sprague Energy Corp.		C/I	C/I	C/I
Tiger Natural Gas, Inc.				C/I
Total Gas & Electric, Inc.	R	R/C	R	R/C
Woodruff Energy	R/C/I	R/C/I	R/C/I	C/I
<i>Totals</i>	<i>16</i>	<i>16</i>	<i>15</i>	<i>22</i>

In SJG territory, SJE is not shown as a residential marketer.

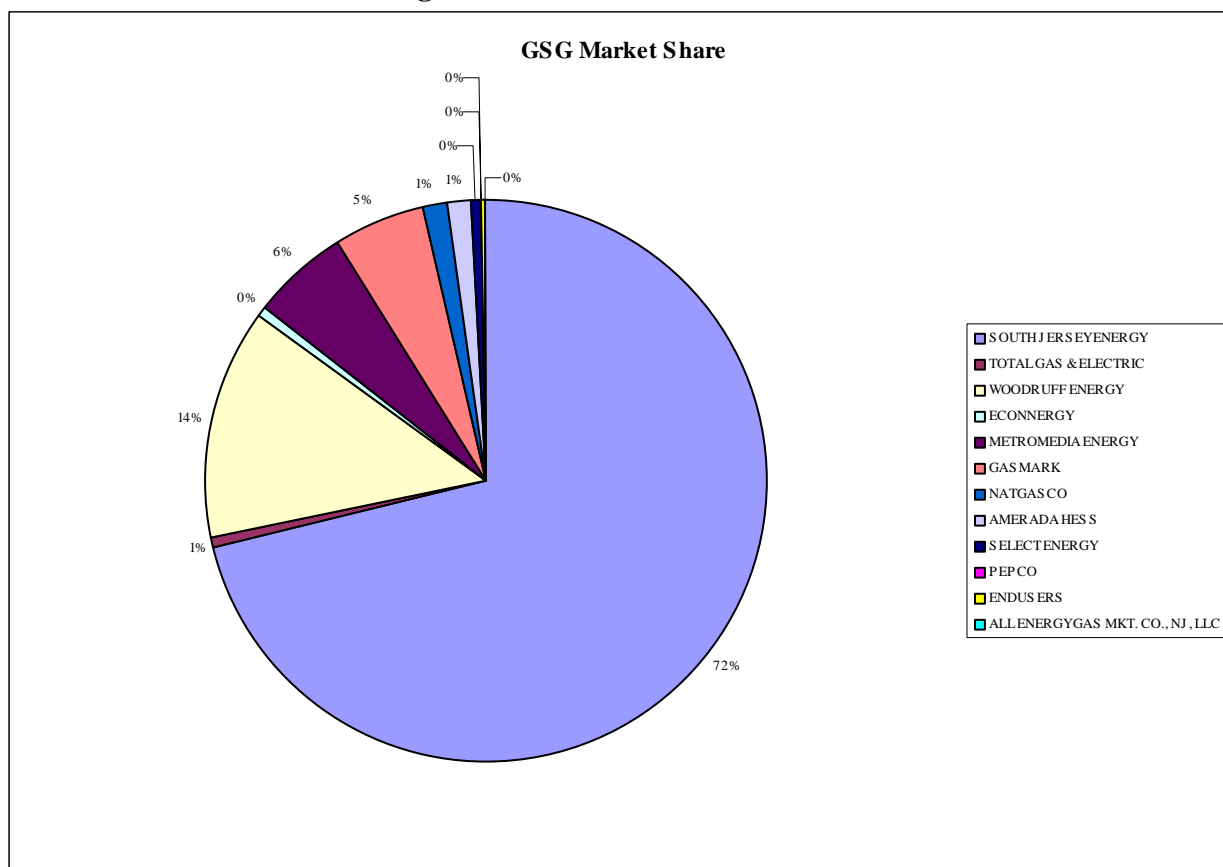
A listing of “active” on the BPU website does not necessarily mean that the marketer is recruiting new customers, and does not indicate market share. Figures VII-6 and VII-7 show market shares in SJG territory, on the basis of customer migration, as of September 2004. The figures exclude BGSS customers.

Figure VII-6. Residential Market Shares



In addition, two other marketers have 32 residential customers between them.

Figure VII-7. GSG Market Shares



The following table shows the customer numbers by marketer for the largest customer categories (CTS, LVSFT, LMSGs, ITS, LVCS, And FES).

Table VII-8. Large Customer Market Shares

Marketer	Customers
<i>Total</i>	85

2. Operations Issues

The Manager, Transportation Services Administration in the Gas Supply & Off System Sales Department serves as the primary interface with marketers, including affiliates. Marketers characterized SJG personnel as responsive, informed, capable, and pleasant to deal with on a day-to-day operational level, with the one exception discussed noted below.

SJG estimates daily contract quantities (*DCQs*) for the coming month using calculations based upon historical data, modified for newly-installed or changed customer equipment. SJG determines the DCQ from a monthly DCQ report provided by the IS organization, which uses a program they created some time ago. The transportation group reviews those reports manually to identify any extreme results before using them. They then communicate the DCQs to the approximately 18 marketers on the system in advance of the gas delivery month, no later than the 25th of the preceding month.

Marketers noted that most interactions with the transportation administration involve paperwork and handwritten forms. The Company uses e-mail and facsimile transmissions for exchanging communications of this type. SJG does not use an electronic bulletin board (*EBB*) or web site for this purpose.

The failure to use an EBB or web site has several consequences:

- Data is sometimes stale; for example, one marketer cited receiving balancing data for large customers two days later via e-mail, which makes accurate daily balancing impossible.
- In the event of interruptions over a weekend, customers receive notice, but marketers may not learn of them promptly, because they are out of the office.
- The Company's tariff provides for daily balancing for certain large customers, when in fact the Company is incapable of supporting that requirement with timely information.

Several marketers also noted that the company is occasionally slow or unresponsive in returning telephone calls because SJG's staff appears to be overwhelmed with paperwork. This problem may be exacerbated by the vacancy existing in transportation administration at the current time.

Potential marketers on the company's system or existing marketers contemplating changes in their businesses need information describing how to do business with SJG. Company personnel indicated that they provided written information in the past, but no longer do so. Their reason is that conditions change so frequently so as to require a continual updating of their literature, making much of what was already in the hands of marketers obsolete. Instead, SJG offers to meet with marketers, with whomever they wish to bring in, to explain the rules for doing business. Liberty acknowledges the difficulty of keeping printed materials up to date, and finds the effort that SJG makes worthy. Nevertheless, this approach poses an undue burden to marketers, and places too great a burden on the SJG personnel who communicate with marketers to be complete and consistent.

C. Conclusions

a. SJG has acted reasonably to support the administrative needs for developing competition in its service territory.

SJG's territory shows a number of marketers that is comparable to what other New Jersey LDCs are experiencing. The tables show that each LDC has between 18 and 25 marketers licensed by the BPU; between 15 and 22 were active in September 2004. As is to be expected, the highest number in both categories is for the largest utility, PSE&G. Each New Jersey LDC has between two and four residential marketers; SJG has three.

The overall migration to third-party suppliers in SJG territory is high when compared to Northeast and to national benchmarks. The migration level for SJG stands at approximately 35 percent. The following references illustrate the unusual level of marketer success. Only Georgia has a materially higher rate; it stands as a recognized national leader on gas retail choice. SJG's rate virtually matches that of Ohio, which also has earned a national reputation for leadership on this subject. The specific comparators are:

- New Jersey: 6 percent state-wide (2 percent excluding SJG)
- Pennsylvania: 7 percent state-wide (residential only; range 0 – 25 percent across utilities)
- New York: 8 percent state-wide
- District of Columbia: 14 percent district-wide
- Maryland: 16 percent state-wide
- Ohio: 37 percent state-wide; range from 8.5 to 47 percent across utilities
- Georgia: 100 percent state-wide (statutorily mandated).

Liberty observed a number of positive attributes at SJG:

- Full market opening – retail competition is available to all customers
- Ease of switching – customers may easily switch to or from utility BGSS and marketer service. The “wet signature” that was initially required has been eliminated.
- Customer awareness of the availability of retail competition appears to be high.

b. SJG's affiliate SJE has been unusually successful in gaining market share in SJG's territory.

In the residential (*RSG*) and small commercial (*GSG*) markets, SJG affiliate SJE holds 82-percent and 72-percent market shares, respectively. Two regional marketers, Woodruff (which provides service in SJG and NJN territories) and ECONergy (which provides service in seven jurisdictions) serve the remaining residential customers. Regional marketers serve most of the remaining commercial customers; national marketers also serve a few. In all the remaining categories, which include all the larger customers, the affiliate holds a 62 percent market share, with Woodruff holding 14 percent and the others holding the remaining 24 percent.

It is very unusual in Liberty's experience for an LDC affiliate to hold such a large market share. Particularly for the largest customers, it is generally very difficult for a utility affiliate to be able to compete against the economies of scale of large, national or even regional wholesalers.

c. Service reliability for customers taking service from marketers has been very good in SJG's territory.

First, marketer performance has been highly reliable. A number of individuals within the Company, including those who deal directly with the marketers, stated that marketer performance, in terms of delivering gas, has been very reliable. No one could recall an instance in which a marketer failed to deliver gas within the required parameters. Accordingly, SJG has not been required to step in where a marketer has failed to deliver.

Second, SJG offers customers a particularly strong source of protection. Almost any customer, except as noted later in this paragraph, may return to utility supply at any time. Customers may return to the utility in the event of supplier failure or non-performance for any reason. In addition, since the gas will continue to flow in any event, there will be no disruption of supply. Any contractual matters between the marketer and customer arising from such returns are another matter. SJG's largest industrial customers comprise the one possible exception to this *back-stopping* of the marketers by the utility. As discussed previously, SJG no longer includes their needs in its design-day calculation, thereby excluding consideration of their possible needs during peak demand periods.

d. To a significant extent, the further development of competition in SJG's serving area will remain dependent on what happens with respect to PSE&G's market.

The continuing development of competition in SJG territory must be examined with reference to events on a statewide, regional and national scale. Retail competition is developing very slowly in New Jersey outside of South Jersey's territory. Migration to third-party suppliers in New Jersey, outside of SJG's territory, lies now at approximately two percent of the customer base.

A number of reasons may explain this phenomenon:

- At a national level, the collapse of the energy business and the bankruptcies and near-bankruptcies of many of the major players dealt retail competition a severe blow; remaining retail players have been proceeding more cautiously, finding benefit in "cherry-picking" in the most marketer-friendly states.

- PSE&G, the largest utility, with roughly two-thirds of the state's customers, is not perceived as fertile ground for marketers; it will be difficult for competition to develop state-wide if the largest market is not accessible.
- Capacity constraints exist in some regions, which may be exacerbated by the way that companies such as SJG address the SOLR issue.
- There is no clearly-enunciated vision for the "end state" of the market place that regulators and market participants share and commit themselves to producing.

The next table shows the dominance of PSE&G in terms of customer numbers in New Jersey. A marketer can reach over a million and a half of the state's customers in a relatively compact geographic area, and in largely in the same media area, by focusing on PSE&G territory. Without it, that marketer must operate in a wide region for the opportunity to reach only a bit more than a third of that number of customers.

Table VII-9. New Jersey Gas Customers by LDC

Utility	Customers	Percent
PSE&G	1,643,000	62
New Jersey Natural Gas	454,000	17
South Jersey Gas	306,000	11
Elizabethtown Gas	262,000	10
Total	2,665,000	100

For competition to grow in SJG's territory, in all likelihood it must be successful in PSEG's territory as well. Gas supply is a low-margin business, which means that it takes the economies of scale that come with a large customer base to be successful. Some large marketers have opined that it takes a base of a least one million customers to be viable on a long-term basis. Clearly, a marketer must be of sufficient size that it can move beyond the opportunistic model that has characterized competition with SJG bundled service to date.

Sending the customers back to the utility when the price goes up simply cannot work in the long run. Successful performance requires assets including a balanced portfolio of customers, sophisticated hedging strategies, a brand identity, and a reputation for service delivery and constancy. Further, a marketer must make an investment in its systems and infrastructure to accommodate the requirements of a given state, and then to develop the interface with each utility.

e. The operational point of contact with marketers operates reasonably well on an overall basis, and is sufficiently "marketer friendly."

Except as noted below, a sampling of marketers indicates that they find SJG personnel knowledgeable and cooperative in doing business. SJG employees appear to recognize that they are in an operational partnership with marketers and endeavor to keep things running smoothly. As well, in Liberty's experience, the reliability of the marketers contributes to maintaining such a relationship.

f. Transportation administration relies too heavily on manual or antiquated systems, which tends to inhibit its responsiveness.

SJG's operation is primarily paper-driven, with longer response times that may be inconsistent with stated requirements or best practice. An effective market requires accurate, timely and efficient information flow. One active marketer indicated an unwillingness to expand its operations in SJG territory due to the level of paperwork and the time-consuming nature of the interaction with the Company.

g. SJG does not provide marketers with a sufficiently structured set of instructions and procedures for dealing with the Company.

For example, SJG does not maintain a package of material to provide to marketers wishing to learn how to do business on its system. The stated reasons were that it became outdated very quickly, so that SJG could not be certain that information in circulation would be current. SJG's remedy was to offer to meet with anyone wanting to do business on its system. However, this approach can be time-consuming for both company and marketer personnel, and does not ensure that all marketers receive complete information and identical information.

D. Recommendations

23. Make SJG assets available to marketers on a pro-rata-share basis; to remarket assets not required by its marketers, SJG should develop a transparent, open-access system whereby it makes its remarketed assets available to all on a competitively neutral basis.

Over the years, SJG's firm customers have contributed to the cost of acquiring and holding capacity and storage assets. If some of those customers choose to migrate, they should be entitled to their *pro-rata* share of assets. That is, a migrating customer's *pro-rata* share of assets should be made available, at cost, to that customer's marketer, subject to transactions at volume levels making it practical. SJG could conduct a pre-season offering to the marketers, and marketers could have the option of accepting or rejecting it. A further refinement could be the transfer of a *pro-rata* share of assets to marketers who opted in as customers migrate after the offering period concluded.

After the offering to the marketers, all remaining assets to be remarketed should be offered through an EBB or some other transparent, open-access system. Potential purchasers of those assets should not have to call the utility on a regular basis to find out what is available. As well, the potential for the appearance of and actual favoritism can be substantially mitigated by the use of a transparent, open system.

24. Improve the information flow between SJG and marketers.

Marketers and customers generally found SJG's transportation administration to be customer-friendly, with one exception; *i.e.*, SJG's staff appeared to be overwhelmed at times, which affected their responsiveness and their ability to provide current data. The problem stems from

the very limited use of information technology and the vacancy on staff. Apparently a relatively low utilization of information technology is widespread in SJG, and is not limited to this group. In the interim, any tariff or operational requirements that cannot be supported reasonably by SJG should be modified. In particular, the daily balancing requirement in the tariff for large customers should be modified to conform to the practice of monthly balancing.

For new marketers exploring the possibility of doing business on SJG's system, the Company should post a list of instructions and procedures on its website. This will address the issues of currency of information (provided that SJG updates the information regularly) and consistency of information provided.

VIII. Commodity Purchases

A. Pre-Audit Period Approach¹

The audit period addressed by this report begins in 1996. SJG for many years before this period purchased its natural gas supplies through long-term bundled sales services that included both the gas commodity and transportation service. SJG made these purchases from Transcontinental Gas Pipe Line Corporation (Transco) under its then-current Rate Schedules CD and FS and from Columbia Gas Transmission Corporation (Columbia) under its then-current Rate Schedule CDS.

SJG regarded the pipeline sales services as inherently secure, given their regulation by the Federal Energy Regulatory Commission (FERC), which included assurances that the pipelines could not abandon service to SJG without first receiving FERC approval under the provisions of Section 7(b) of the Natural Gas Act. SJG, like many others in the industry, also considered pipeline supplies to be secure because the pipelines obtained natural gas from a variety of producers and suppliers, and because they took delivery into their pipeline systems at numerous receipt points. Additionally, SJG felt that, during this phase in the evolution of the natural gas industry, FERC rate jurisdiction also provided assurances that pipeline supply pricing was reasonable.

The implementation of FERC Order No. 636 in November of 1993 changed circumstances substantially. This order precluded interstate pipelines from acting as merchants selling bundled gas-supply services. The arrival of open access required LDCs like SJG to negotiate with third-party producer/suppliers for the commodity portion of gas supply. SJG originally sought to duplicate the character of the service that the pipelines had provided. Specifically, SJG sought to put into place long-term gas supply contracts in amounts equaling 100 percent of its pipeline transportation contracts. SJG believed that such a use of long-term contracts would minimize the transaction costs associated with the buying and selling of gas. Examples of these costs include negotiating, monitoring, enforcing, and renegotiating contract extensions.

SJG established the following criteria for evaluating long-term supply proposals:

- Minimum contract term of ten years
- Gas sourcing from supplier's overall system, not limited to particular fields or wells
- Supply warranted for the agreement term
- Corporate guarantee of seller performance
- Pricing mechanism to reflect market price
- "Regulatory-out" provisions
- Price arbitration provisions as a last resort.

At the conclusion of its evaluation processes, SJG entered into ten long-term gas supply arrangements with eight separate suppliers. They included Transco (through an affiliate), Amerada Hess Corporation, CNG Energy Services, Mobil Natural Gas, Texaco Gas Marketing, Union Pacific Fuels, Vastar Gas Marketing, and Distrigas of Massachusetts Corporation for liquefied natural gas (LNG). The sellers under these agreements assessed a reservation fee or

demand charge for SJG's right (but not the obligation) to call on the gas they had an obligation to supply. This fee varied by supplier.

As time progressed and open access transportation became more commonplace, SJG decided that long-term contracts had become less economically attractive. SJG came to share in the general industry consensus that a utility gas-supply portfolio should contain a mixture of spot purchases, short-term contracts, and some long-term contracts. Many reasons supported the change from historical dominance of long-term contracts:

- Development of a marketplace populated by large numbers of buyers and sellers
- Reduced advantage in transaction costs for long-term contracts
- Development of liquid spot and futures markets
- More transparent pricing
- Opportunity to secure natural gas supplies reliably over the long term.

This last opportunity arose through the availability of successive spot purchases or contracts varying in duration and priced with reference to market indices; *e.g.*, the New York Mercantile Exchange (NYMEX) futures prices. The 1996 starting point for the audit period corresponds with early SJG efforts to restructure or to allow the expiration of a number of its long-term gas supply contracts in order to add shorter-term deals to its utility-supply portfolio.

B. Audit-Period Procurement Overview^{2,3,1}

SJG relied almost exclusively on already-existing long-term commodity contracts as the audit period began. These contracts contained very high levels of quantity flexibility. In 1997, the company began to phase in additional shorter-term purchases. These shorter-term purchases covered about a third of the company's total purchases in 1999 and 2000, and reached about 80 percent in 2004. A significant amount of the company's long-term contract quantity entitlements expired in 2001. The company then instituted its *winter RFP* (request for proposals) process for securing large portions of the gas needed for the peak season of November through March. Gas procured through these winter RFPs gradually increased to about 20 percent of SJG's total purchases in 2003 and 2004, offsetting a meaningful portion of the commodity entitlements lost as long-term contracts continued to expire.

These RFPs did not meet all of the requirements arising from the expiration of long-term contracts. SJG made shorter-term purchases outside the winter period (*i.e.*, from April through October), under monthly agreements made at the end of the month before delivery began. SJG used about 60 percent of these monthly-purchase quantities for storage injection, and the remainder to meet ongoing summer demand. During the winter months, daily purchase adjustments were more common than monthly purchases. SJG made these monthly and winter RFP purchases within the context of the long-term contracts and "normal" winter weather at levels that would require virtually no spot-market purchases, provided that winter weather was relatively *normal*. SJG would then typically make daily purchases to meet any needs imposed by variations from the assumed *normal* winter weather and usage that had formed the basis for its plans to make longer-term contract and RFP purchases.

Not all SJG purchases went directly to its system-supply customers. SJG, like many in the industry, has often found it advantageous to make purchases in order to support off-system sales that take advantage of fixed portions of its supply portfolio. For example, pipeline capacity needed to support peak delivery requirements will have a component in excess of utility needs at non-peak times. It is frequently more effective to bundle this increment of available capacity with commodity specifically purchased for that reason to make sales of delivered gas, as opposed merely to making releases of such pipeline capacity. SJG has purchased on a monthly basis virtually all of the gas used for such off-system sales. NYMEX or *Inside FERC* indices have generally formed the pricing basis for these purchases. SJG has generally made off-system sales on a monthly basis as well; it has typically used NYMEX indices for pricing these sales.

The following table sorts SJG's total natural gas purchases during the audit period by long-term contracts, RFP contracts, and spot purchases. Spot purchases comprise all those that do not qualify as long-term or RFP purchases. This classification puts SJG's monthly and daily purchases into the spot-market category. The table also summarizes off-system sales (OSS), whose quantities lie within the total purchased quantities for each year. The table uses millions of decatherms (MMDths), a measure of heat content. One decatherm equals one million British Thermal Units (BTUs).

Table VIII-1. SJG Gas Purchases: 1996 - 2004

	<i>Total</i>	<i>Long-Term</i>	<i>RFP</i>			<i>Spot</i>	
<i>Year</i>	<i>MMDTh</i>	<i>MMDTh</i>	<i>%</i>	<i>MMDTh</i>	<i>%</i>	<i>MMDTh</i>	<i>%</i>
1996	52.6	51.6	98.1%	0.0	0.0%	1.0	1.9%
OSS	8.9						
1997	48.5	45.7	94.2%	0.0	0.0%	2.8	5.8%
OSS	15.0						
1998	54.0	46.1	85.4%	0.0	0.0%	7.9	14.6%
OSS	27.8						
1999	68.8	41.5	60.3%	0.0	0.0%	27.3	39.7%
OSS	44.1						
2000	62.9	41.9	66.6%	0.0	0.0%	21.0	33.4%
OSS	39.4						
2001	65.9	19.7	29.9%	5.0	7.5%	41.2	62.6%
OSS	31.4						
2002	53.1	6.8	12.8%	9.2	17.3%	37.1	69.9%
OSS	31.2						
2003	53.1	4.7	8.9%	11.5	21.6%	36.9	69.5%
OSS	28.1						
2004	44.7	0.1	0.2%	8.6	19.3%	36.0	80.5%
OSS	22.1						
Total	503.6	258.1	51.2%	34.2	6.8%	211.3	42.0%

OSS = Off-System Sales and is contained within Total Purchased for year.

The table demonstrates a number of broad trends across the audit period:

- SJG's long-term contract quantities purchased decreased from virtually all to almost none of the purchased amounts
- Winter RFP quantities grew from zero for the first four years to about 20 percent of total purchases
- Spot quantities have increased from very small levels to about 80 percent of the total.

SJG believes that the high level of liquidity that has come to the gas market has eliminated for most of the year any cost advantage from contracting to reserve gas ahead of time. SJG considers the winter RFP period of November through March to be the only buying period that requires such reservation. SJG therefore contracts for gas ahead of time, in order to assure adequate winter supply. SJG, outside of this winter RFP period, has generally operated under the premise that the liquid market and the company's numerically and geographically diverse portfolio of suppliers make monthly (spot) purchases the most effective vehicle for optimizing price and supply-reliability objectives.

The preceding table also shows that total SJG gas purchases decreased during the audit period, even though its deliveries to customers grew very substantially. This apparent disparity is explained by the large growth in the transport gas that third-party suppliers provide to end-users through the SJG delivery system. Off-system sales, considered in isolation, peaked in 2000, and fell thereafter. Capacity release figures, however, must also be considered. Growth in capacity-releases has more than offset the post-2000 reduction in off-system sales. The result is that the combined amounts have steadily increased throughout the audit period, when considering together the related categories of off-system sales and capacity releases.

SJG's Gas Supply Department (GSD) provided Liberty with an estimate showing that restructuring and permitting its long-term gas supply contracts to expire in favor of shorter-term arrangements have produced gross annual demand-cost savings of approximately \$9.4 million to BGSS customer since 1996. Approximately \$5.7 million in demand charges under new contracts offset this gross savings. SJG terms approximately \$1.4 million of these offsetting charges to be recurring, and classifies the approximately \$4.3 million remainder, which arises under short-term agreements, as non-recurring. The recurring charges comprise annual demand charges for storage availability, and SJG pays the non-recurring charges for demand/reservation fees and call options.

SJG carries out its purchases under a formal policy. Its *Natural Gas Procurement Policy* states that SJG analyzes requirements for natural gas on annual, seasonal, monthly, and daily bases. The strategy for meeting a typical winter month's demand calls for SJG to plan for an *average day* for that winter month, and then to use gas from three primary sources to provide the resulting *base* amount established for the month:

- Remaining long-term contracts
- Winter RFP agreements
- Storage.

SJG then meets the final quantities actually needed when weather and demand cause these base amounts to vary through:

- Use of its *take-or-release* options (defined in Section C. *Long-Term Contracts and Take Options* which immediately follows this section)
- Daily purchases, if needed to deal with marginal, remaining requirements.

SJG recognizes the interplay between market price and the use of these take-or-release quantities. A drop in market price can make purchases more economical than a release from storage. Seasonal use patterns also influence SJG's decision-making; *i.e.*, a persistent cold spell that has caused an unusually rapid storage drawdown may add to the attractiveness of using the take-or-release quantities.

C. Long-Term Contracts and Take Options^{4,5,10,3}

1. Summary of Audit Activities

Liberty's examination of commodity contracting sought to determine how effectively SJG has managed the quantities, pricing, reliability, and supplier credit/risk acceptability for the three different categories comprising its commodity purchases; *i.e.*, long-term, winter RFP, and monthly and daily spot purchases, separately and in relationship to each other in meeting SJG's needs. Liberty examined the long-term contracts and their take options, management, and changes during the audit period, considering the dynamic regulatory and market conditions in what has been a time of great change in the natural gas industry. The criteria Liberty used to judge long-term contracting performance included:

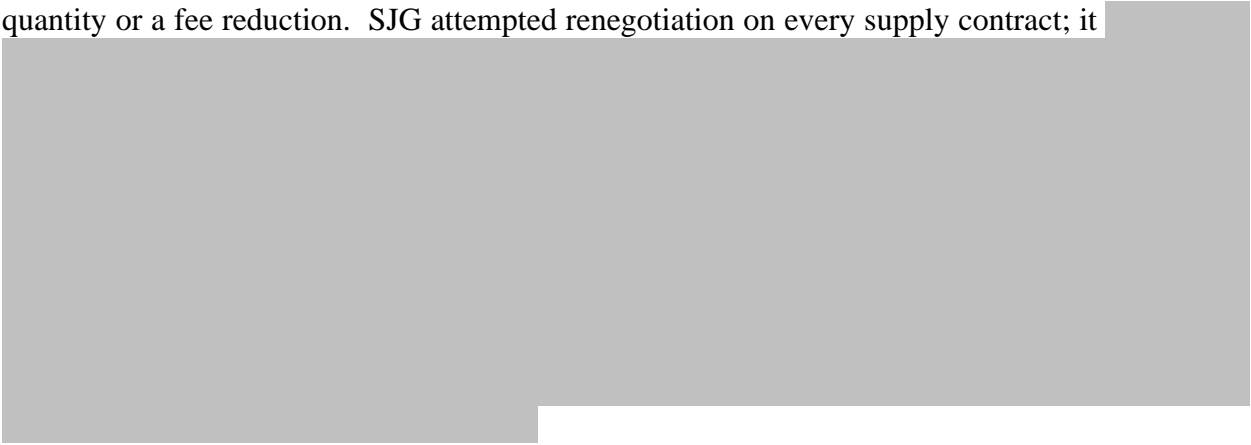
- Whether contract decisions showed appropriate consistency with stated policy regarding pricing, reliability, and supplier credit/risk acceptability
- Whether there has been a coherent and effective plan diligently applied to reduce the almost exclusive dependence the Company had placed on long-term contract quantities historically
- Whether SJG has achieved substantial, measurable success in reducing its dependence on long-term contracts
- Whether SJG has made effective use of the swing contract and proper use of supply takes from it.
- Whether SJG has established an appropriate, non-excessive amount of flexibility in take-or-release options.

2. Findings

The long-term contracts that SJG negotiated in the wake of FERC Order 636 represented 98.1 percent of SJG's total gas procured at the beginning of this audit period in 1996. The following table summarizes the long-term contracts existing at the beginning of the audit period.

[illegible][illegible]

SJG has undertaken continuing efforts to renegotiate the demand charges or reservation fees for the take-or-release privileges of these long-term contracts. The majority of SJG's renegotiations occurred in 1994 and 1995, prior to this audit period. They consisted of negotiating sessions with the suppliers. SJG focused on reducing the annual reservation fees paid, either in the form of a quantity or a fee reduction. SJG attempted renegotiation on every supply contract; it



SJG uses the terms *demand charges* or *reservation fees* interchangeably to describe its take-or-release privileges. A take-or-release privilege comprises a monthly option to take or not to take all of the contracted quantity for that month. At times, SJG has persuaded a supplier to let the utility take only a portion of the contracted quantity for the month. These requests fall outside of the formal contract agreement; therefore, the supplier's response depends upon its ability and willingness to grant the request. SJG must inform the supplier of its intent during bid week; *i.e.*, the week prior to the beginning of the next calendar month. These monthly take-or-release options comprise the only primary quantity flexibility tool that SJG has used outside of the swing contract, which the next paragraph discusses. Throughout the audit period, but not recently, there has also been sporadic use of a few days' "peaking" contract with associated flexibility options. SJG has found the monthly take-or-release options to be the most cost-effective option. SJG has found them to be commonly available and to offer a good hedge against pricing volatility and actual physical unavailability. Daily take-or-release options, which are also available, are more expensive. In addition, the additional sourcing flexibility provided by SJG storage capacity makes daily options less crucial.

SJG has had only one swing contract during the audit period. SJG renegotiated it eventually into three portions. SJG executed this one swing contract with Transco/Wesco, an affiliate of Transco well before 1996. It expired March 31, 2001. A swing contract differs from a typical SJG long-term contract. Those long-term contracts contain monthly take-or-release provisions; the swing contract allows SJG to take or not a contracted amount on a daily basis and without nomination, after SJG has given the supplier a pre-indication of intent for that month. This original swing contract with the Transco affiliate allowed variability from 0 percent to 100 percent of the total amount, 128,000 Dth per day, for which SJG contracted. SJG succeeded by 1996 in renegotiating the quantity down to 84,631 Dth per day, in two portions. SJG secured a further reduction to 79,630 Dth per day in August of 1998 (assumed to be August 31, 1998 for analysis purposes), secured a more favorable reservation fee for part of the quantity, and removed about 14,000 Dth per day from swing rights.

SJG's relatively smaller long-term supply contracts began to expire in 1999. The swing contract, which was larger, expired in 2001. At that time, SJG instituted the winter RFP process for delivery in November through March to provide for winter supply. SJG had actually used an RFP process earlier that year for summer storage-fill from April 2001 through March 2002.

The next table compares how much gas SJG actually took under its long-term contracts with the maximum quantities specified in the contracts, within the context of SJG's available quantity flexibility. This flexibility included the daily swing rights in the Transco/Wesco contract and its three portions. The table shows this agreement to cover about half the available long-term quantity from 1996 through 2000, and about a quarter of the available long-term quantity in 2001, the year this contract expired. All remaining quantities available under long-term contracts provided SJG with monthly 100 percent take-or-release rights. The Transco/Wesco contract's daily rights and coverage of such a large percentage of the long-term gas available therefore provided significant flexibility. This situation remained even after renegotiation of Transco/Wesco-2; *i.e.*, down to 45 percent swing rights after August 31, 1998.

Table VIII-4. Portion of Available Gas Actually Purchased (MMDth)

Year	Total Purchases	Long-Term Available	Long-Term Purchases	Difference (Col.2-3)	Swing Available
1996	52.6	57.0	51.6	5.4	30.9
1997	48.5	57.0	45.7	11.3	30.9
1998	54.0	56.4	46.1	10.3	24.0
1999	68.8	54.6	41.5	13.1	22.8
2000	62.9	47.7	41.9	5.8	22.8
2001	65.9	24.9	19.7	5.2	5.6
2002	53.1	16.8	6.8	10.0	-
2003	53.1	11.3	4.7	6.6	-
2004	44.7	7.0	0.1	6.9	-

"Swing" is included in the "Long-Term Available" Category

Liberty compared the difference between long-term gas available and long-term gas actually purchased (shown in the *Difference* column) with the swing quantity available. That comparison indicates that SJG did not use from about 40 to 80 percent of the available swing from 1996 through 2000. This level of non-utilization is significant. The swing option provided SJG with the greatest flexibility. Its modest use makes it reasonable to conclude that SJG also did not make significant use of the less-flexible take-or-release privileges allowed by the other long-term contracts. Swing rights cost money to include in supply contracts. During this period, SJ paid for significant flexibility that it did not use.

Approximately 5.6 MMDth of swing rights remained with SJG in 2001. This amount would have been sufficient to match SJG's release needs from long-term contracts. SJG, however, still had take-or-release rights at about three times this amount (the long-term contract available less quantities from Transco/Wesco.) By 2002, the swing contract had expired, and the relationship between the remaining take-or-release quantities and the difference between the quantities available and quantities purchased became more closely matched to 2002 and 2003 total gas purchased. The long-term quantities with take-or-release rights, however, remained at about two and a half times the long-term quantities actually purchased. Accordingly, there remained the potential for gain through further reductions in take-or-release rights.



3. Conclusions

- a. **SJG acted consistently with its policy to provide for security of supply by having sufficient supply and numerical and geographical diversity of suppliers with good credit-worthiness.**

SJG had six different suppliers for long-term contracts during this audit period. All were credit-worthy and all proved reliable in delivering supply. In addition, throughout the audit period, SJG had more long-term gas available to it than it purchased.

- b. **Over an extended period, SJG has appropriately reduced its reliance on its old long-term contracts and reduced costs through continued renegotiations and permitting contracts to expire.**

From 1996 through 2004, SJG reduced the percentage of long-term gas taken from 98.1 to 0.2 percent of its total purchases. For two years prior to this audit period, SJG made a concerted effort to renegotiate the total demand costs through a combination of quantity and reservation fee reductions. This policy and practice continued into the audit period with subsequent quantity and cost reductions for the Hess and Transco/Wesco contracts in 1998, although most of the supplier concessions had occurred in 1994 and 1995. As the long-term contracts expired, they were not renewed. Subsequent sections of this chapter will discuss the winter RFP and monthly spot purchases that replaced these expiring quantities.

SJG's Gas Supply Department provided an estimate showing that restructuring and permitting its long-term gas supply contracts to expire in favor of shorter-term arrangements has produced gross annual demand-cost savings of approximately \$9.4 million to BGSS customers since 1996. Approximately \$5.7 million in demand charges offset these savings. The \$5.7 million consists of

\$1.4 million of recurring annual charges for long-term storage availability and \$4.3 million for non-recurring costs under short-term agreements for demand/reservation fees and call options.

c. SJG contracted and paid for more flexibility than it needed during most of the audit period.

From 1996 through 2000, SJG did not utilize from 40 to 80 percent of its available swing rights. Neither did the company use to any meaningful degree its take-or-release privileges on the other long-term contracts. The swing remaining for 2001 would have been about sufficient to match SJG's release needs, but SJG still had take-or-release rights to about three times this amount. For 2002 and 2003, SJG had take-or-release rights to about two-and-a-half times the long-term quantities actually purchased, which indicates the desirability of reducing these take-or-release quantities further. SJG used its take-or-release rights to be able to purchase less long-term gas than it had available under contract. SJG's use of the monthly take-or-release option in lieu of the more expensive daily option moderated the impacts of its excessive take-or-release quantities. The company also has storage capacity, which provides additional purchasing flexibility.

SJG has only two long-term contracts remaining. Both of them expire October 31, 2006, but have annual extension provisions. SJG has also exchanged these quantities for alternative gas while obtaining capacity-release credits, which provides the option for working around these remaining contracts, if needed. This capacity-release flexibility also underscores the fact that the company has had excess capacity.

d. SJG has demonstrated a bias for supply security over economy in its procurement strategies, even considering extensive efforts to reduce costs and redundancy of take options.

Reliability of performance must be a central element of utility procurement strategy. LDCs should seek attain reliability of performance without excessive redundancies or costs. SJG has been making progress in reducing the redundancy of its supply options.

4. Recommendations

25. Provide for a more rigorous examination before committing to additional take-or-release rights.

Even though SJG has significantly improved the level of its quantity flexibility options by reducing excessive redundancies, SJG needs to be certain always to consider all of its current flexibility options, including storage, before committing to new take-or-release rights. The point here is simply to avoid redundancy in take options as much as possible, as take flexibility costs money.

26. Encourage more emphasis on price in determining the mix between price and reliability.

Liberty encourages the Company to make price a more tangible objective for GSD staff by structuring specific goals and including tangible measures it in their performance objectives.

This recommendation applies not only to contracts, but to the RFP process, which Section B.4. of this chapter addresses.

27. Test supplier interest in longer-term contracts.

SJG has made a concerted and appropriate effort to move away from the long-term contracts it had procured prior to the audit period. The Company's reasons for moving away from long-term contracts are all valid, and the move has clearly produced beneficial results. As the gas market stabilizes, however, the Company should routinely test the market for interest in longer-term relationships. As suppliers bring on new facilities or sources of gas, or as they may have financial reasons for longer-term commitments, they may be open to considering discounts or new pricing options in return for longer-term commitments to take. Liberty recommends that, as part of the next RFP process, the Company put out a relatively small quantity for a one-, two- or three-year commitment, in order to test supplier interest.

D. Winter RFP Agreements and Planning Process^{6,7,8,11,3,5}

1. Summary of Audit Activities

SJG began to make *Winter RFP* procurements in 2001. Winter RFPs have represented about 20 percent of SJG's total gas procurement for the last three years. Liberty sought to determine how effectively SJG managed the quantities, pricing, reliability, and supplier credit/risk acceptability for the winter RFP process. How well SJG balanced these RFP purchases with those of long-term and monthly contracts formed a part of Liberty's review. Liberty examined the winter RFP contracts and their take options. The criteria Liberty used to judge RFP contracting performance were:

- Whether contracting has been consistent with stated policy regarding pricing, reliability, and supplier credit/risk acceptability
- Whether there has been reasonable justification for the use of winter RFP purchases
- Whether SJG applied an appropriate process for determining RFP and contracted quantities
- Whether SJG has appropriately implemented its RFP process
- Whether SJG has established an appropriate, non-excessive amount of quantity flexibility in take-or-release options.

2. Findings

SJG instituted in 2001 its winter RFP process to contract for a portion of the gas needed from November through March. The resulting contracts required SJG to take approximately 70 percent of the established quantities as firm supply, with the remainder to be taken (or not) at SJG's option, on a take-or-release basis similar to that provided for in its long-term contracts.

Planning Process

SJG applies a defined planning process in order to determine what quantities to put out for bid through its winter RFP process. The financial planning department prepares an *Original Monthly Budget Dth Sales and Sendout* for the year. It summarizes by month estimates for total firm

sales, additional interruptible sales, utility load, interruptible transportation from third-party marketers, SJG gas purchases, off-system sales, and capacity releases. This document includes a daily Dth sendout estimate for each day, which it organizes by category. The GSD then rearranges this data into a format useful in producing a *Supply and Requirements Forecast Report*, which also includes off-system sales, capacity release, hedged supplies, and storage injections and withdrawals for each month for the year.

The GSD estimates the amount of RFP gas quantities needed by comparing the demand requirements against known supply resources; *e.g.*, long-term contracts, storage, customer-owned gas, and any other available source. The GSD sizes the winter RFP quantities to balance the system completely for a “normal weather” situation. There should be no need for additional spot purchases if “normal weather” occurs and if the draw on storage quantities is at the expected rate. However, the GSD retains flexibility in deciding among different combinations of quantities from different sources. For example, SJG can increase storage withdrawal rates somewhat by injecting more into storage in late summer and early fall.

Determining exactly what quantities to solicit through the winter RFP process requires the exercise of a number of judgments in the face of uncertainty. For example, high gas costs in the late summer of 2004 caused the GSD to reduce moderately its firm winter RFP commitment, while increasing its take-or-release commitment, as compared with the previous year. The kinds of factors that GSD applies when sizing its winter RFP quantities include:

- Anticipated price compared with storage quantities and price
- Market conditions
- Amount of committed buying desired going into winter
- Off-system sales commitments per strategic plan
- Fixed price hedge supply obtained
- Pipeline capacity constraints on deliverability, and capacity releases
- Input from the Weather Service
- History of weather patterns and gas quantity needs in previous years
- Commodity still needed for each winter month based on demand forecasts after considering all available supply sources (listed as “SJG Daily Requirements” on page 2 of the *Supply and Requirements Forecast*)
- Avoidance of over-commitment (retention of flexibility)
- Knowledge that the WSS storage known has a small “heel” (in addition to the quantity listed for WSS on page 2 of the *Supply and Requirements Forecast*; or the current winter, this “heel” is about 0.5 MMDth, which provides about a 1 percent cushion for the months of November 2004 through March 2005).

GSD also continues to fine-tune the contracted RFP quantities; about half of the time it contracts for less than the *up-to amount* cited in the RFP. GSD has a high degree of confidence in the budgets it gets from the financial planning department. GSD must nevertheless continually assesses how the year is unfolding in order to assure that those estimates remain current, verify

that actual supply remains adequate, and ultimately determine any needed adjustments in quantities to be secured.

Supplier Qualification

SJG's policy provides for the issuance of RFPs to "all known qualified gas supply vendors who have expressed an interest in providing such supply." The GSD uses the list of companies that the risk management group has approved. Periodically, GSD asks this group to evaluate a potential new supplier that is not already on the approved list. Risk management uses an eleven-point assessment and companion scoring system. A single individual has been performing all of the credit assessments for about the last two years, which has promoted consistency in evaluation. The eleven points include:

- Relationship history in years
- Credit/business references (one or two are checked for consistency with other data)
- Payment history (average)
- Financial rating agency ratings
- Dunn & Bradstreet financial stress rating
- Dunn & Bradstreet credit score rating
- Financial statements/ratios (patterns of income/loss, debt/equity, quick ratios, and covering interest payments; failure to cover interest payments or leverage at 70 percent or greater causes disqualification)
- Stock market price (if applicable) for current 52-week period
- Management-team stability
- Regulated or non-regulated business (preference for regulated)
- Current market and media perception (including financial chat rooms).

For new suppliers who pass these credit-worthiness tests, the Company enters into a standard form contract for gas purchases and sales. An Exhibit A to this contract is completed and sent to the counter-party each time there is a transaction. The forms used are those prepared by the Gas Industry Standards Board, the "GISB" contract, or the North American Energy Standards Board, the "NAESB" contract.

The GSD uses the qualified list to determine whether a potential bidder will receive an RFP. The companion scoring system determines how much credit to allow a counter-party, assuming it has passed all qualification hurdles.

Bids and Awards

SJG generally uses two or three bid packages. Approved suppliers receive an August notice by e-mail or facsimile of specific bid requirements for each package. The information includes quantity, terms, delivery points, and bid due date (in mid-September). SJG's policy states that it will acquire firm gas supplies on a "best value available" basis. The considerations that GSD applies include but are not limited to price, security of supply, diversity of supply, availability, and counterparty credit risk. SJG policy is to follow the Commodity Purchasing Guidelines

described in the *Financial and Physical Natural Gas Transaction Risk Management Policy and Procedures*.

GSD evaluates the responses received to determine the best price offered by a credit-qualified, reliable supplier. Its practice then is to distribute contract awards as broadly and diversely as possible. In recent years, GSD has made efforts to form good working relationships with a broad array of suppliers. Winners receive a confirming letter containing key award elements.

SJG's contracts use a mix of pricing that relies on *Inside FERC* and NYMEX benchmarks. *Inside FERC*, commonly referred to as *Index* or *IF*, pricing uses interviews to produce a published listing of pricing at more than 100 receipt points. NYMEX pricing uses the end-of-month contract price for a receipt point indexed to the Henry Hub. SJG has observed that the relative pricing relationship between IF and NYMEX constantly changes. They generally flip-flop and their prices are very close. The difference in the total price of each (*i.e.*, including reservation fees) typically falls within 2 cents, ranging up to 4 cents. Sometimes, however, one can be cheaper, even for an entire season. SJG has elected in recent years to use an almost-even mix of the two pricing conventions, which averages the variation between them. GSD instituted a new hedging tool, Planalytics, in November of 2004 to mitigate volatility with their discretionary hedging program. GSD has not yet had time to consider whether or how to use it as part of the RFP process.

Liberty examined the application of the 2004-2005 RFP process in detail. Liberty reviewed the RFP, the solicitation e-mails sent to each supplier, and their responses to each of the three packages. Liberty also examined the summary charts listing all bids (cross-checked with the actual supplier responses) and indicating the winners, the summary memo identifying the winners of each package, and the quantities, prices, receipt points, and time period, as well as the final confirmation letters to the winners. Finally, Liberty questioned GSD about certain administrative details regarding the 2004-2005 RFP documents.

Liberty followed this detailed review of the 2004-2005 process with a survey of information from the three earlier RFP cycles. This review included the summary charts on each package showing the prices, offered and contracted amounts, receipt points, and any options and associated pricing. These summary charts contained added general notes on non-pricing criteria used in the decision process. GSD personnel added these general notes on non-pricing criteria from memory of what had happened in response to a Liberty request for an identification of any non-pricing factors used by GSD. The following paragraphs summarize the findings of Liberty's review.

2001-2002 Summer Storage Fill RFP: SJG preceded the first winter RFP with one for a summer fill extending from April 2001 through March 2002. SJG subsequently decided that summer market conditions did not require a multi-month commitment; therefore, the company thereafter addressed summer storage-fill purchases on a monthly basis. SJG, however, used the lessons learned from this first effort in its later winter RFP purchasing.

SJG received responses from six suppliers. SJG awarded the contract to its affiliate, SJRG. The quantity provision called for 15,000 Dth/day at Station 65, with an SJG option to decline to take

50 percent of that amount. Two bidders offered a lower price than SJRG did for the first 50 percent of the amount, but their offers contained compensating disadvantages:

- Pricing the second 50 percent at market, which would risk volatility
- Supplier access to SJG capacity.

November 2001 through March 2002: SJG contracted for:

- Package 1: 35,000 Dth per day firm delivery at Station 65 for the whole period
- Package 2: 25,000 Dth per day firm with a take-or-release basis for December 2001 through February 2002 at Station 65.



GSD also told Liberty that at times supplier prices change after they submit an RFP, or suppliers are not available in a timely fashion to clarify details about their submission. Liberty noted, however, that GSD's documents did not include non-pricing criteria specifics other than the written comment that "the suppliers selected were based primarily on price and reliability of service." Liberty describes overall deficiencies in the RFP and bid evaluation process in the portion of this report addressing *Organization, Staffing and Controls*.

November 2002 through March 2003: SJG contracted for:

- Package 1: 45,000 Dth per day firm delivery at Station 65
- Package 2: 25,000 Dth per day firm delivery at Columbia Gulf
- Package 3: 25,000 Dth per day firm delivery, with a take-or-release option, at Station 65.

SJG received responses from 14 suppliers; each bid on at least one package.



November 2003 through March 2004: SJG contracted for:

- Package 1: 35,000 Dth per day firm supply for delivery at Station 65 for the whole period
- Package 2: 30,000 Dth per day firm supply for delivery at Columbia Mainline for the whole period
- Package 3: 20,000 Dth per day firm delivery, with a take-or-release option, for delivery at Station 65 from December 2003 through February 2004.

SJG received bids from 18 suppliers for one or more of the packages, from among the 22 suppliers invited to bid.

The SJG notes again state that price and reliability of service comprised the primary decision factors.

November 2004 through March 2005: SJG contracted for:

- Package 1: 30,000 Dth per day firm supply for delivery at Station 65 for the whole period
- Package 2: 25,000 Dth per day firm supply for delivery at Columbia Mainline for the whole period
- Package 3: 30,000 Dth per day firm delivery, with a take-or-release option, for delivery at Station 65 from December 2004 through February 2005.

SJG received bids from 22 suppliers for one or more of the packages from among the 27 suppliers invited to respond.

The SJG notes state that price, historical service reliability, interest in using different suppliers in order to establish good working relationships, and mixing the use of Index- and NYMEX-based pricing drove the selection of the winners.

The 85,000 Dth/day contracted for as part of the 2004-2005 Winter RFP represent:

- 57 percent of the January, 2004 utility load
- An average of 85 percent of the winter utility load, using 2004 load data (Nov: 124 percent, Dec 83 percent, Jan 57 percent, Feb 69 percent, Mar 91 percent)
- Substantial flexibility, with 35 percent of the 85,000 Dth/day being on a take-or-release basis for December through February.

Summary of the four winter RFP cycles: the following table shows that SJG has widened the number of participants during the course of its four winter RFP cycles. SJG has also increased the diversity of its suppliers during this period. None of the awards from the winter RFPs has gone to an affiliate.

Table VIII-5. Winter RFP Results

Winter Season	Firm	T/R	Winners	Others Price Competitive
2001-2002	35	25		
2002-2003	70	25		
2003-2004	65	20		
2004-2005	55	30		

Quantities are in MDth/D

The following table compares the RFP quantities contracted on firm and on take-or-release bases with quantities actually purchased. To ascertain how much of the take-or-release amounts SJG needed, Liberty subtracted the amount of firm supply from the amount purchased. These numbers include the first RFP, which SJG conducted primarily for a summer fill, and which lasted from April of 2001 through March of 2002.

Table VIII-6. RFP Contract vs. Purchased Quantities

Year	Contracted		Total Purchased	% of Firm	% of ToR
	Firm	ToR			
2001 (W)	2.1	0.8			
2001 (S)	2.1	2.0			
2001 Total	4.2	2.8	5.0	100	29
2002 (W)	7.4	3.0			
2002 (S)	0.7	0.7			
2002 Total	8.1	3.7	9.2	100	30
2003	10.3	2.9	11.5	100	41
2004	9.2	2.1	8.6	93	0

MMDth

SJG took its entire firm contracted amounts for all of the years for which it used the RFP process, and took about 30 to 40 percent of its take-or-release quantities in 2001 through 2003. SJG had significantly more winter gas available on a take-or-release basis than it actually took, which demonstrates its conservatism in assuring that it would have sufficient gas available during its peak season.

3. Conclusions

a. SJG has developed a reasonable means to assure winter gas supplies, but has not fully documented it.

The winter RFP process has provided an appropriate means for complementing long-term and monthly spot purchases. It has allowed SJG to avoid long-term commitments and to moderate reliance on spot purchases. SJG has not managed this component of its supply portfolio through detailed guidelines. It has used general policy guidance and a now multi-year practice to develop an experience-based, *de facto* process for staying in touch with the marketplace through its RFP cycles. SJG has now repeated its RFP process for four winter cycles – carrying them out at the same time of the year and using the same pattern of pricing against benchmarks and deciding how much quantity to secure on a take-or-release basis. SJG has not documented the non-price, “best value” criteria that it applies.

b. SJG has effectively carried out its RFP processes.

As noted in the previous chapter, Liberty has some concerns with the procedural aspects of the RFP process. However, the data that Liberty reviewed showed satisfaction of SJG policy goals in securing:

- Best price (with one exception) and a variety of suppliers, with that variety increasing
- Blending price between IF and NYMEX to wash out distortions
- Geographic diversity
- Firm supply (or firm with take-or-release, if requested).

SJG has used a sufficient number of bidders in the winter RFP process. SJG has improved the process over time. An increase in supplier diversity is evident. A sufficient number of suppliers

are bidding at arm's-length. Collectively, their offerings have provided an adequate representation of the market at that point in time.

Liberty observed four occasions during all of the four RFP cycles when non-winners offered better prices than the winners. In three instances, the supplier had other meaningful sales to or deals with SJG. The fourth instance arose through an honest failure to make timely communications to the bidders. The potential cost savings from all of these four examples equal less than 0.003 percent of the gas costs from the top ten suppliers from 2001 through 2004. Therefore, given the appropriate interest in supplier diversification, SJG has not suffered material cost disadvantage as a result of these four cases. It is equally likely that its encouragement of supplier diversity has equaled or exceeded the price premium it paid in these instances.

SJG builds sufficient flexibility into its RFP processes to assure adequate winter supply. For 2001 through 2004, 225,000 Dth per day were firm and 100,000 Dth per day had take-or-release privileges. Thus, about 30 percent of the quantity has take-or-release privileges.

Liberty verified through the manager of risk management that SJG employed an appropriate process for identifying and limiting its solicitations to risk/credit-qualified suppliers. The portion of this report addressing *Organization, Staffing and Controls* addresses deficiencies in documented procedures related to SJG's RFP and bid-evaluation process. The director gas supplies and off-system sales, checks with risk management regularly to assure the use of risk/credit qualified suppliers. The director stated that SJG has never had a serious default; its suppliers have proven to be reliable.

c. The relatively low use of take-or-release quantities over the past several years underscores SJG's bias towards reliability of supply, and raises concerns about the costs of securing so much flexibility.

SJG purchased 30 to 40 percent of the take-or-release quantities in 2001 through 2003, and none in 2004. Its low use of these quantities takes on added significance while the Hess long-term contract (with its take-or-release rights) remains, unless the capacity-release credit more than offsets the added reservation fee for the RFP quantities.

An additional consideration for the winter months when gas demand is large, and especially in SJG's area where weather can be so variable, is the importance of having operational flexibility. The numbers reported in the *Findings* section above are yearly totals, which can mask operational flexibility somewhat. However, it remains important for SJG to consider the flexibility of the Hess contract, as well as the flexibility inherent in storage quantities and a liquid market, when determining how much take-or-release RFP gas to contract.

4. Recommendations

28. In light of the mature and liquid gas market, consider scenarios that decrease the RFP quantities somewhat, especially the optioned quantities.

The objective of this recommendation is to further reduce reservation fees.

29. Conduct a structured examination and test of the use of multiple winter RFP issue dates, especially during the summer lulls.

Again, the objective is to explore for possibilities for improving terms for the supply that the Company requires.

30. Reduce (or analytically support the appropriateness of) the portion of RFP quantities contracted on a take-or-release basis, considering the take-or-release quantities in the remaining Hess long-term contracts and storage flexibility.

It is clear that the historically high gas costs late in 2004 encouraged a decrease in the firm RFP commitment, and an increase in the take-or-release quantities, compared with the previous year. The question is whether take-or-release quantities can be further reduced after the gas market has stabilized.

31. Improve analytical tools and procedures used as part of the RFP process.

The Company asserts that it “agonizes” over gas-supply decisions that it might have made. Liberty saw no evidence of structured *post-mortem* analysis in designing succeeding years’ acquisition programs, however. Liberty believes that analysis on parameters like proportion of contract flexibility actually used might refine the Company’s objectives for succeeding years’ acquisition programs. Liberty suggests that the better-defined objectives that should result from disciplined post-mortem analysis would be a first step toward better results.

SJG should also employ a spreadsheet that structures and documents the evaluation of all of the criteria in the policy goals, and that also includes such practical items as untimely response times for final negotiations or bid-price changes. SJG should incorporate such changes into improved and documented procedures, as recommended in the chapter of this report addressing *Organization, Staffing and Controls*. SJG should also formalize the *de facto* RFP process with written guidelines and check points to assure better implementation of policy and avoidance of random oversights.

It is important for SJG to analyze each year’s experience in preparing its purchasing plans for the following year. SJG should be continually assessing the mix among long-term, winter-period and spot purchases in order to take advantages of any changes in supplier preferences. As noted earlier, Liberty suspects that, once the gas market stabilizes, suppliers may become interested in longer-term commitments. The Company should be testing the market continually, in order to identify, and hopefully benefit from, any such changes.

SJG should also perform a trial examination of the benefits of using the Planalytics tool to help with the timing and nature of the monthly purchases. The Company has recently purchased the market-modeling tool. Liberty understands that the tool is designed to identify buying opportunities, primarily for financial hedges. Gas marketers (including SJE) assert that they gain competitive advantage over utility companies by buying gas more effectively. Liberty recommends that the Company design some experiments to test application of the model to physical purchases. Running some tests “on paper” would be appropriate first, to reduce negative consequences if the tool is not effective for physical purchases, or if Company personnel are not yet comfortable using it.

E. Monthly and Daily “Spot” Purchases^{9,11,3,5}

1. Summary of Audit Activities

As SJG’s quantity of purchases from long-term contracts decreased during the audit period, the company increased its spot purchase amounts. Spot purchases increased from 1.9 percent of the quantity purchased at the beginning of the audit period to 80.5 percent of the quantity purchased in 2004. Spot purchases have become a major element of SJG’s supply portfolio. The criteria Liberty used to assess spot-contracting performance included the following:

- Whether stated policy regarding pricing, reliability, and supplier credit/risk acceptability are thorough and consistent
- Whether SJG has demonstrated reasonable justification for making spot purchases such a large portion of its portfolio
- Whether SJG has demonstrated measurable success in its spot purchases
- Whether there exists an appropriate relationship between long-term, winter RFP and spot purchases such that the system was neither “churning” excessive quantities of gas nor “scrambling” to procure gas.

2. Findings

Spot Purchasing Process

SJG applies the term “spot” to any purchase that it does not make under a long-term contract or secure through the RFP process. Its monthly and daily purchases fall into this category. During the five winter-season months of November through March, SJG has generally made most of its spot purchases daily, but it has also made monthly spot purchases. SJG uses Intercontinental Exchange (ICE), a live trading platform, to monitor the bid/ask prices for next day trading and to ascertain the market price before entering into a spot purchase or sale. Monthly spot purchases during these winter months generally tend to have prices very close to the RFP prices, but SJG’s spot purchases do not include the reservation fee that comes with take-or-release arrangements. Daily spot prices in the winter can have significant volatility.

Most but not all of SJG’s spot purchases during the seven non-winter season months have monthly terms, although it also makes daily purchases. SJG monitors price information on ICE, but also relies on broker quotes for Station 65 (in the production area) to establish price. SJG buys almost all of the gas it uses to make off-system sales on a monthly basis.

GSD’s gas traders routinely and regularly receive daily requests and bid information from suppliers/buyers asking what SJG needs to buy or sell at that time. These traders compare ICE information, broker quotes, and any other market intelligence with what they learn from these potential counterparties. The traders communicate largely by Internet instant messaging. After they gain confidence that they have performed the necessary price discovery from the marketplace, the GSD traders negotiate with the parties that have contacted them and perhaps with others they know to be in the market. The GSD traders tend to focus on finding and settling on deals that will bring market prices from reliable counterparties. When they find them, there is not an emphasis on *shopping around* for market-beating prices.

The parties with whom GSD traders negotiate spot purchases are similar but not limited to the counterparties who participate in the winter RFP process. Liberty noted in the RFP process analyses that at times suppliers equaling or bettering the price offered by the RFP winners had other meaningful monthly supply arrangements with SJG. As with the RFP process, spreading purchase quantities among multiple suppliers comprises an important SJG goal.

Spot Purchase Amounts

SJG has made increasing use of spot purchases during the audit period, but was unable to sort these purchases accurately into monthly and daily categories. In addition, the company's data systems do not make it possible to accurately separate transactions that actually form part of executions of the long-term contract or RFP quantities. Liberty therefore chose a proxy method for identifying spot purchase amounts; *i.e.*, the quantities of gas put into storage inventory, which came from the *Perpetual Inventory of Natural Gas Report*. The relevance of this report is that about 60 percent of the summer purchases, mostly monthly contracts, go to storage injection and about 40 percent meet summer demand. Assessment of the summer fill data, as explained below, provides insights into whether the system had "churn" of excessive gas, or "scrambling" in winter to meet demands. The following chart lists the spot purchases, the summer and winter fills, and the off-system sales (OSS).

Table VIII-7. Spot Purchase, Storage Fill and OSS Amounts

Year	Spot	Summer Fill	Winter Fill	OSS
1996	1.0	1.6 ¹	0.4 ²	8.9
1997	2.8	2.9	0.6	15.0
1998	7.9	11.7	0.4	27.8
1999	27.3	9.1	5.9	44.1
2000	21.0	13.1	5.1	39.4
2001	41.2	13.4	0.9	31.4
2002	37.1	7.1	1.6	31.2
2003	36.9	12.4	0.7	28.1
2004	36.0	11.9	0.4	22.1

Amounts in (MMDth)

¹ Partial data (April – July)

² Partial data (January – March)

April through October comprise the summer-fill months. November through March comprise the winter-fill months. The fill quantities could come from any source; *e.g.*, long-term contracts, RFP solicitations, or daily/monthly spot purchases. Liberty compared spot-purchase amounts with fill data and off-system sales in order to determine whether the system had "churn" of excessive gas or "scrambling" for additional gas during the winter season.

Liberty determined to perform this assessment after observing a number of circumstances surrounding SJG's 2004 supply portfolio. SJG made almost no long-term purchases in 2004. Summer fill amounted to 11.9 MMDth. Liberty estimated total summer demand for 2004 at 19.8 MMDth, on the basis of SJG's estimates that 60 percent of April-October purchases go to fill and

40 percent to meeting summer demand. Liberty determined the winter portion of OSS sales to be 16.1 MMDth. Liberty derived this figure from the SJG 2004 budget (*i.e.*, 73 percent of the annual OSS, whose budgeted 2004 total was 22.1MMDth). The sum of the monthly summer purchases for summer need and fill (19.8) and the winter off-system sales (16.1) total 35.9 MMDth. This sum matches the 36 MMDth of spot quantities purchased in 2004. The consistency with budgeted numbers supports the conclusion that SJG performed well in avoiding the need for winter-season “scrambling” to get needed additional gas.

Liberty performed similar analyses for preceding years. The data support a similar conclusion for years 2001 through 2003. Liberty used a rounded 70 percent to obtain the winter portion of annual off-system sales. The estimated 2003 amounts required for satisfying summer fill, summer demand, and winter off-system sales need totaled 40.4MMDth. This estimate compares well with the 36.9 MMDth of spot purchases, and suggests some long-term gas was included in the fill. It is reasonable to expect some long-term gas to be included in the fill. The 2002 estimated amounts required for satisfying summer fill, summer demand, and winter off-system sales amounted to 33.6 MMDth. SJG’s 37.1 MMDth of spot purchases compares reasonably with this estimate, especially in light of the 1.6 MMDth of winter fill. The 2001 estimated amounts required for satisfying summer fill, summer demand, and winter off-system sales totaled 44.3 MMDth. This estimate compares well with the 41.2 MMDth of spot purchases, and again indicates the use of a small amount of long-term gas for storage fill.

During 1996 and 1997, the first two years of the audit period, long-term contracts provided substantial portions of supply and off-system sales were comparatively modest. Liberty determined that the spot purchases matched the summer fill quantities well during this period, suggesting no excessive “scrambling” for winter gas. The proxy data for the years from 1998 through 2000, however, are unable to give insights about possible winter “scrambling” for gas, because the long-term contracts played too substantial a role in those years and their quantities could easily mask any such activity

This surrogate data will not allow the same firmness in conclusions that would result from the ability to secure cleanly segmented monthly and daily spot purchase data. The data, however, do suggest that: (a) SJG did not need to do any excessive “scrambling” to purchase winter gas, and (b) there was no “churn” of excessive quantities.

Spot Purchase Suppliers and Prices

The increase in SJG purchases of spot gas (about 80 percent of total 2004 purchases) raises the issue of how well SJG has been able to match its buying times with favorable market conditions, recognizing one cannot expect anything close to a perfect match. SJG feels that purchasing such a large percentage of its requirements in the spot market offers an advantage over increased use of longer-term purchases. SJG also believes that using a group of numerically and geographically diverse suppliers moderates its spot-market price risks, and having storage gas gives it additional flexibility. SJG cites the following reasons in support of its reliance on spot purchases:

- The market’s great liquidity
- SJG’s involvement in the market on a daily basis

- The use of ICE and broker quotes for Station 65 to stay sufficiently on top of market conditions.

Liberty's examination of spot purchases showed consistency with SJG policy for achieving value with reliability. Liberty observed actions consistent with a policy similar to that SJG has applied to the RFP purchases. Liberty also validated that SJG applied its processes for credit approval to its spot suppliers in recent years.

3. Conclusions

a. The liquid gas market has enabled SJG to buy about 80 percent of its requirements reliably in the spot market.

SJG cites the great liquidity in the marketplace, its involvement in the market on a daily basis, and its use of ICE and broker quotes for Station 65 to stay sufficiently on top of market conditions. SJG also believes that using a group of numerically and geographically diverse suppliers moderates its spot-market price risks, and having storage gas gives it additional flexibility. SJG has additional flexibility in the off-system sales market, and, of course, has flexibility with its storage quantities.

b. The proxy data indicate that SJG is neither "churning" excessive quantities of gas nor "scrambling" to obtain winter gas.

This surrogate data does not permit the same conclusion firmness that cleanly segmented monthly and daily spot purchase data would allow. The data, however, do suggest that SJG did not need to do any excessive "scrambling" to purchase winter gas, and except for the years of 1998 through 2000 where no clear conclusions can be drawn, the data also suggest that no "churn" of excessive quantities was in the system.

c. SJG has acted consistently with its policy for achieving value with reliability, and within its gas procurement policy guidelines.

Liberty's examination of spot purchases showed consistency with SJG policy for achieving value with reliability, and follow a philosophy similar to that for the RFP purchases. Liberty validated that SJG applied its processes for credit approval to its spot suppliers in recent years.

d. The GSD traders tend to focus on finding and settling on deals that will bring market prices from reliable counter-parties; there has not been an emphasis on shopping around for market-beating prices.

The mature and liquid market for buying/selling gas has made it possible for SJG to be in the market on a continual daily basis in order to procure gas reliably at market prices, rather than pre-buying the majority of its requirements and paying reservation fees. SJG assures itself of paying market prices by using the live trading platform ICE (Intercontinental Exchange) to monitor the bid/ask for next day trading in both the winter and the summer; however during the summer months SJG also relies heavily on obtaining broker quotes for Station 65 and then buying near that price. Once the GSD traders have confidence that they have performed the necessary price discovery from the marketplace, they negotiate with the parties who have contacted them and/or with additional parties, and settle. The GSD traders tend to focus on finding and settling on deals that will bring market prices from reliable counter parties. There is

not an emphasis on shopping around for market-beating prices. SJG assures further itself of reliability by dealing only with a diverse number of suppliers it has deemed are credit/risk qualified, have proven to be reliable, and who are also geographically diverse.

e. The combination of spot, RFP, and long-term purchase quantities fit reasonably with each other, notwithstanding the concern about the potential opportunity to reduce RFP amounts under take-or-release options.

The surrogate data suggested that SJG did not need to do any excessive “scrambling” to purchase winter gas, and except for the years of 1998 through 2000 where no clear conclusions can be drawn, the data also suggest that no “churn” of excessive quantities was in the system.

With the gas market being so liquid, SJG feels there is no cost advantage to contracting to reserve gas ahead of time. SJG feels their only critical buying period is the winter RFP period of November through March. For these months, gas is contracted ahead of time to be assured of adequate winter supply. Outside of these winter RFP amounts, SJG finds the combination of a liquid market and SJG’s suppliers diverse in number and geography sufficient to enable SJG to use monthly (spot) purchases to maximize the blend of price and security.

In making the shift from having virtually all long-term quantities early in the audit period to having about 80 percent spot monthly/daily purchases in 2004, SJG has very significantly reduced the redundant flexibility in take-or-release privileges. The winter RFP purchases include a reasonable portion optioned on a take-or-release basis for surety of winter supply, and the remaining long-term Hess contract also has take-or-release flexibility. There is probably opportunity to reduce the RFP quantities, especially the optioned quantities, a bit. The strategy for meeting a typical winter month demand is to plan for an “average day” for that month, to take from the winter RFP agreements or long-term contracts and pull from storage for the needed ‘base’, and to meet the final amounts actually needed via the take-or-release option, augmented by fine-tuning with daily purchases, if needed.

Virtually all of the gas for off-system sales comes from monthly purchases. SJG sells the gas on a monthly basis, typically indexed to NYMEX, although the purchases are referenced to both NYMEX and *Inside FERC*.

SJG Natural Gas Procurement Policy states SJG analyzes requirements for natural gas on an annual, seasonal, monthly, and daily basis, and Liberty verified that SJG’s actions are consistent with this policy.

SJG emphasizes reliability, and continually works to find the best way of achieving that reliability at market prices. To achieve this, SJG has dramatically reduced its dependence on long-term contracts, instituted winter RFP purchases to help assure adequate winter supply, is in the market on a daily basis for meeting summer fill and on-going requirements without having to pay reservation fees, and has substantially reduced excessive quantities reserved on a take-or-release basis. Supportive of the best price mix and reliability is SJG’s philosophy to use a diverse number of suppliers it has deemed are credit/risk qualified, have proven to be reliable, and who are geographically diverse. In addition, lastly, SJG uses off-system sales to optimize the value to ratepayers.

f. SJG purchases have occurred in competitive markets and in a manner that allows SJG to produce strong price performance.

It is impossible to know whether SJG always received the best price available in the market. SJG has done a number of things right, however. SJG has made purchases for winter delivery in a competitive market via the winter RFP process: A sufficient number of suppliers are bidding at-arms-length, and collectively, they are defining the market at that point in time. SJG builds flexibility into these contracts with the take-or-release option, which was for 30.8 percent of the contracted amounts for the four winter RFP cycles. It can be argued that the quantity of winter RFP gas with a take-or-release option can be reduced a bit, saving SJG the reservation fee. The question can be raised if the timing of the RFP process is optimized. Would there have been benefit to spreading the packages over a particular time period, especially including the traditionally slow summer months? The question can also be raised if Planalytics could prove helpful with the RFP purchases.

By definition, SJG received the best possible price for the gas it purchased at a particular point in time via the winter RFP because SJG was buying at the market defined by a breath of suppliers at that point in time. In addition, SJG was using a mix of pricing based on *Inside FERC*, and NYMEX to smooth out volatility, since one cannot predict which reference will be cheapest, and they typically flip-flop. A similar comment can be made about SJG being in the market for the monthly and daily (spot) purchases because SJG is using the live trading platform ICE (Intercontinental Exchange) to monitor the bid/ask for next day trading in both the winter and the summer, and also relying heavily on obtaining broker quotes for Station 65 during the summer months and then buying near that price. Again, a breadth of suppliers is used. The GSD traders tend to focus on finding and settling on deals that will bring market prices from reliable counter parties. There is not an emphasis on shopping around for market-beating prices.

Since the remaining two long-term Hess contracts have the ability to be swapped for alternative gas and earn a capacity release credit, they do not appear to be a negative for SJG.

4. Recommendations

32. Adopt a more analytical approach to spot purchasing.

The Company asserts that it “agonizes” over gas-supply decisions that it might have made. Liberty saw no evidence of structured *post-mortem* analysis in designing succeeding years’ acquisition programs, however. Liberty believes that analysis on parameters like proportion of contract flexibility actually used might refine the Company’s objectives for succeeding years’ acquisition programs. Liberty suggests that the better-defined objectives that should result from disciplined post-mortem analysis would be a first step toward better results.

SJG should also continually assess the mix among long-term, winter-period and spot purchases in order to take advantages of any changes in supplier preferences. As noted earlier, Liberty suspects that, once the gas market stabilizes, suppliers may become interested in longer-term commitments. The Company should be testing the market continually, in order to identify, and hopefully benefit from, any such changes. SJG should also conduct a focused examination of the benefits of using the Planalytics tool to help with the timing and nature of the monthly purchases.

Gas marketers (including SJE) assert that they gain competitive advantage over utility companies by buying gas more effectively. Liberty recommends that the Company design some experiments to test application of the model to physical purchases. Running some tests “on paper” would be appropriate first, to reduce negative consequences if the tool is not effective for physical purchases, or if Company personnel are not yet comfortable using it.

IX. Hedging

A. Background

In early 2001, as part of a series of measures to deal with the unprecedented run-up in gas prices that occurred during the winter of 2000-2001, the BPU directed SJG (and the other New Jersey LDCs):

to submit a comprehensive hedging program to Board Staff and the [Ratepayer Advocate] within 60 days of the date of this Order. The submission shall include specific information about how its hedging program will be managed and supervised. The financial and physical hedging strategies to be utilized shall be identified and Petitioner shall establish and fully describe a risk management committee authorized to review hedging activity on an ongoing basis.

In May of that year, SJG submitted to the BPU its *Financial and Physical Natural Gas Transactions Risk Management Policy and Procedures*, referred to hereinafter as its *Risk Management Policy*, or *RMP*. The RMP presented statements of the Company's policy toward the risks inherent in purchasing gas, the procedures that the Company expected to use to further develop and implement its policies in this area, and the strategies that the Company expected to use to mitigate the various risks that it had identified.

The RMP also included *Commodity Purchasing Guidelines* to guide its use of financial instruments in adding stability to customer gas costs. Those guidelines addressed matters including:

- What proportion of the Company's annual requirements would be hedged with financial instruments
- What financial instruments (*e.g.*, calls, caps, collars, puts) would be used in hedging
- "Secondary" transactions, which the guidelines defined as the use of financial instruments to try to reduce the cost of supplies previously hedged
- Criteria for setting hedging price parameters.

In some cases, these Commodity Purchasing Guidelines were quite specific. For example, the Guidelines stated that:

- A non-discretionary hedge program would be established and consist of the purchase every month of one futures contract for each of the 18 coming months
- Dollar cost averaging would be used to account for this accumulated hedge position
- At no time will the total cost from secondary transactions, from both losses and net premiums paid to third parties, exceed \$3.0 million in any LGAC year.

The futures contract contemplated was a gas supply contract between a buyer and a seller, whereby the buyer is obligated to take delivery and the seller is obligated to provide delivery of a fixed amount of a commodity at a predetermined price at a specific location. Futures contracts are traded exclusively on regulated exchanges, and are settled daily based on their current value

in the market. For natural gas, the standard contract is for delivery of 10,000 Dth over the course of a month to Henry Hub (a location in southern Louisiana). Natural gas futures trade on the New York Mercantile Exchange (*NYMEX*).

In the course of the Company's recent rate case, there was considerable discussion of the Company's RMP. The Stipulation entered in settlement of that case includes the following undertakings by the Company:

- SJG agreed to modify its *Commodity Purchasing Guidelines* provide for an effective increase in the portion of its BGSS supply that would be hedged
- The Company agreed to implement a method for quantifying the costs, risks and benefits of alternative hedging strategies
- The Company agreed to document each hedging transaction contemporaneously, on an auditable hedging report
- The Company agreed to document all of its natural gas transactions with its affiliates, using a form of report that was provided in the proceeding
- The Company agreed that its Risk Management Committee would meet at least quarterly, and would maintain minutes of those meetings separately from the risk management committees of any of the Company's affiliates
- These minutes are to be made available to the BPU Staff and the Ratepayer Advocate during discovery in BGSS proceedings.

The Company has recently re-stated its RMP to accommodate these changes. Recently, the parent company developed an RMP for non-utility operations. The non-utility RMP is quite similar to that for the utility company; an important difference is that the non-utility companies have no limits on the types of transactions in which they may engage; the non-utility companies are allowed to make markets in options, for example.

B. Summary of Audit Activities

Liberty examined the planning of the hedging program. Liberty examined how SJG has pursued program objectives through the identification of tactics and instruments employed as part of the Company's plan. Liberty sought to assure that SJG has used defined, specific objectives. Vague objectives such as "reduce price volatility" or "stabilize prices" are difficult to translate into specific measurable goals. Without quantitative goals, it is difficult to conduct an effective hedging program.

Liberty also examined the Company's execution of the program. The creation of an effective hedging program typically requires a significant investment in staff, support services, and financial resources. Brokerage accounts must be opened and margin funds placed on deposit. New oversight, control, and reporting procedures must be developed, implemented, and supported with new information-system resources. New credit agreements must be developed and monitored between the utility and trading counter-parties. Staff must be provided, and needs to be trained to perform new functions.

SJRG carries out the principal transactions through which SJG executes its hedging program. Liberty therefore examined the performance of SJRG in order to assure that it met utility needs fully and at arms' length.

The criteria that Liberty applied in its examination included the following:

- There should be clear and appropriate goals and objectives for financial hedging
- There should exist sufficient infrastructure and controls to manage the risks imposed by hedging activities
- The execution of hedging activities should conform to the program and should reflect the sound application of any discretion permitted
- The board of directors should receive regular reports about hedging activities and risks, and it should use that information to exercise continuing oversight.

A common failing in addressing infrastructure issues arises from a tendency to minimize or avoid the necessary investments, often reflecting an approach of treating hedging as a side-stream, experimental activity. Insufficient controls often result from such an approach. One might find system support that comprises little more than a home-built spreadsheet on a trader's computer, and management finds itself unaware of the true value of the company's hedge positions. Under-funded hedging operations present major risks. Extensive trading losses suffered at many of the country's largest utilities over the past several years provide ample evidence of the damage potential that effective trading controls must address to assure success.

C. Findings

1. Goals and Objectives

As described in various filings, the SJG hedging program adopts the basic objective of achieving commodity *price stability*. A properly designed and implemented hedge program focused on price stability tends to smooth both the peaks and valleys of gas commodity prices across time. SJG's hedging activities may therefore produce commodity costs for any given month may exceed or fall under that month's market prices. This hedging policy papers that SJG submitted to the BPU explicitly raise this possibility.

2. Execution and Exercise of Discretion

As set out in the initial *Commodity Purchasing Guidelines*, and affirmed in the stipulation in the rate case, SJG's hedging program includes both discretionary and non-discretionary parts. The non-discretionary program attempts to mitigate price volatility through dollar-cost averaging. Each month, SJG purchases two NYMEX contracts for each of the next 18 months, and sells the accumulated 36 contracts in the current trading month. The gains or losses on those 36 contracts are netted against the current month's total commodity costs. Since the beginning of the non-discretionary program in May, 2001, the cumulative gains on the NYMEX contracts total about \$2.98 million; that is, the profits from the futures' contracts reduced the utility's WACOG over that period by that amount. The impact of selling the contracts in October, 2004 was to reduce the utility's WACOG by about 20 cents/Dth.

The non-discretionary part of the program is conducted for SJG by SJRG, its affiliate. SJRG also conducts hedging activities for its own account, and in order to provide fixed-price gas supplies to its customers who want them. Thus, SJRG has the necessary brokerage account for placing the trades.

SJRG decides when to buy each month's 36 contracts (two contracts per month for each of the next 18 months). SJRG advises that it looks for periods when markets are calm to buy the contracts. SJRG sells the accumulated contracts on the last trading day of the current month. SJRG does not charge SJG anything for its advice in this regard; SJG pays only for the cost of the hedges, or receives the benefit of the hedges, when each contract settles.

When SJRG purchases contracts, it invoices SJG the same day for the purchase amount and enters into a purchase/sale contract with SJG to reverse the deal flow when the contract closes. SJRG holds the contract under its brokerage accounts while they are open. The arrangement allows SJG to *own* futures contracts through the buy/sell contract with SJRG without the need to maintain brokerage accounts or margin money in its own name.

Recently, SJG has initiated a discretionary part to its hedging program. The Company has acquired a proprietary trading system called *Planalytics* for use with the discretionary hedge program. This trading system relates gas price movement with weather conditions. The model develops correlations between previous price behavior and weather conditions, and then develops an outlook of future prices on the basis of the analyst's assumed future weather patterns. The model then compares its forecast of future price behavior with current NYMEX futures prices over the next 18 months. The model highlights those futures prices that vary from what might be expected from the specified view of future weather patterns. The result is a *buy* or *don't buy* recommendation based on the comparison of actual futures prices to those that are predicted by the model.

SJG installed the Planalytics model in November 2004. Thus, the Company has not had an opportunity to develop substantial working experience with it. The plan is to follow the model's recommendations at a low level initially and then, based on experience, increase the Company's hedge positions to a maximum of 30 percent under the discretionary component. The 20 percent hedged through the non-discretionary component will continue as well. Discretionary purchases, unlike non-discretionary ones, should not occur at even levels throughout the year. The Company expects that the model will find isolated periods, perhaps a month or two out of the year, that present the modeled price gaps that will support a buy recommendation. Discretionary component purchases will occur at those times. The use of the model accomplishes a result that could apply to the non-discretionary component of the program, as well as the discretionary: It takes many aspects of the timing of purchase decisions outside the influence of any trader.

To date, the Company has accomplished its discretionary program by *triggering* fixed-price options in its gas-purchase contracts. It has also bought some options. This activity is conducted by SJG, not by SJRG (although SJG may consult with SJRG regarding its views on gas-market conditions).

3. Infrastructure and Controls

As noted earlier, the Company filed its *Risk Management Policy* in May 2001, in response to the BPU's directive. As directed by the BPU, an important focus of the Policy is the Risk Management Committee. The members of the Risk Management Committee are as follows:

- President
- Executive Vice President and CFO (SJI), Chairman of the RMC
- Executive Vice President and COO (SJG)
- Senior Vice President Corporate Secretary & Corporate Counsel (SJI)
- Asst. Vice President Gas Supply & Delivery (SJG).

SJI's Manager, Risk Management attends RMC meetings.

The committee has a number of responsibilities:

- Establish a general framework for measuring and monitoring financial and physical transaction business risks, including market, credit, performance, delivery, liquidity, operational, legal, and tax risks
- Establish acceptable risk/exposure thresholds and associated trading limits as necessary
- Approve all methods used in risk management
- Oversee all derivative activity
- Approve all transactions that fall outside of specified risk management guidelines
- Ensure that objective and independent controls exist
- Enact and enforce threshold violation and trader misconduct policy
- Present reports to the Audit Committee reflecting risk management activity
- Periodically assess the policy and procedures and provide the Audit Committee with a report of assessment.

The RMP addresses other aspects of risk management, in addition to outlining the program for managing price risk. Hedge instruments must pass both liquidity and credit tests. Credit limits and guidelines must be established prior to any over-the-counter trades. The Company uses the ISDA (International Swaps & Derivatives Association) contract form in its counter-party trading arrangements.

Both SJRG, which executes the trades, and SJG, the beneficiary of those trades, receive trade confirmations. This control reduces the potential for unauthorized trades and for creating unknown trading positions. The Company limits who may gain access to and modify trading information. Reconciliation of open positions between SJG and SJRG takes place at each month end. Established procedures forbid "Wash Trades." There exist penalties for inappropriate trading activity. The RMP also outlines maximum trading exposure.

D. Conclusions

- a. SJG has operated its financial hedging program under objectives and strategy that is consistent with what the BPU approved; the forthcoming initiation of the**

program's discretionary element promises to provide further important benefits in reducing price volatility for system-supply customers.

In order to be successful, a program for managing price risk must pass several hurdles, the most challenging of which relates to establishing clear and appropriate goals and objectives. The definition of an effective program should reflect understanding of what is required to implement a program and a willingness to make the necessary investments in planning, systems and personnel. Liberty's experience has shown frequent weakness in addressing such hedging infrastructure issues. SJG/SJI's situation, however, is much more encouraging. The RMP gives clear indication that management has understood the breadth of an effective risk management program.

SJG has clearly identified the scope of the hedge program and the specific means for accomplishing the result. SJG has appropriately limited the scope of trader discretion in both the discretionary and non-discretionary elements of the SJG hedging program. Specifically, the limits on hedging activities limits the tendency to go for the trading "home run", while risking the loss of a significant amount of money in the process.

The hedge program's stated objective is price stability; the structure of the non-discretionary program will tend to promote that objective. Spreading out the purchases over 18 months will smooth out the major fluctuations while capturing the overall price trend.

SJG's non-discretionary program has produced customer benefits that would not have been achieved without the program. Its design and implementation will smooth the inevitable spikes in the gas markets and it is a very simple program to operate. As the program is currently operated, the risk to the customer would come in the form of higher than market WACOGS resulting from hedge positions that are above the market. Such an outcome can be avoided if the program is managed within some broad target price range. There is yet insufficient experience with the discretionary program element to permit an evaluation.

b. The price stability objective for SJG's hedging program is too generally stated.

A generally stated objective, such as *price stability*, provides insufficient guidance in the absence of at least some quantitative boundaries. To say that price stability forms the objective says no more than that a company seeks to reduce price volatility. The question remaining is by how much it is to be reduced. A more meaningful objective would be to say the Company would not allow its commodity price volatility to exceed a given percentage, or a range of percentages. An alternative is to establish an objective that the company will institute price stability measures if commodity price volatility exceeds a given percentage over a defined time.

The need for quantitative measures of price stability becomes especially important with respect to the discretionary hedge program. Such definition would provide specific guidance on when one needs to put on more or less hedge positions.

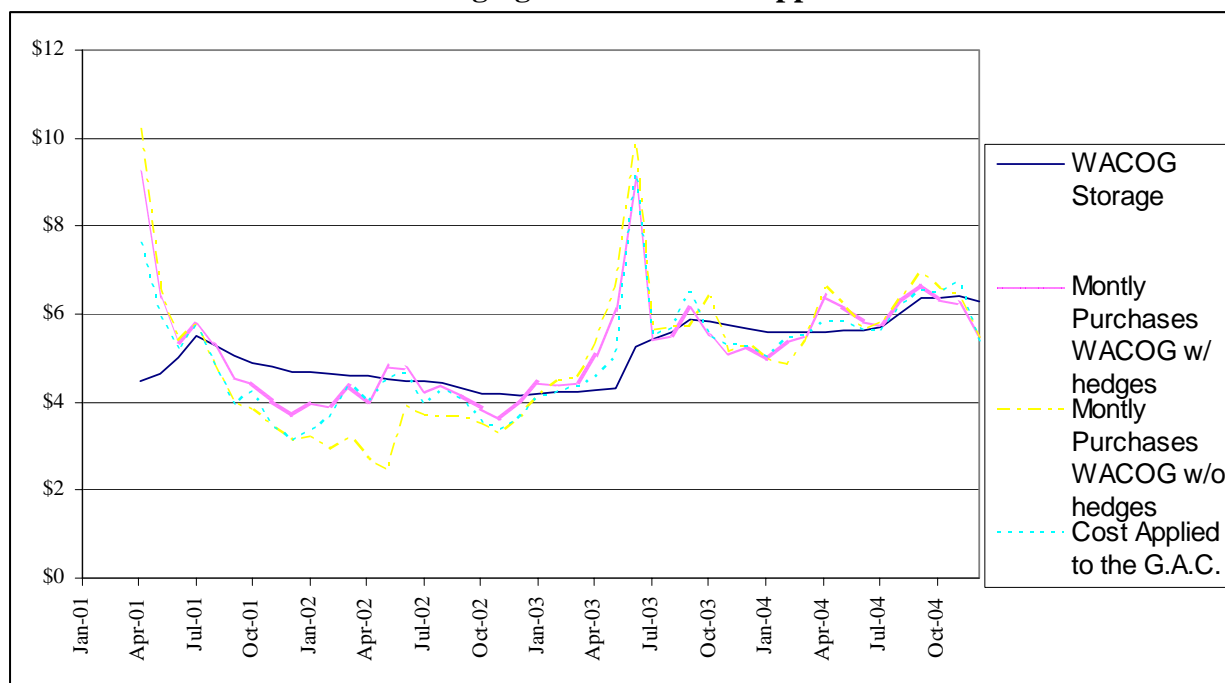
c. SJG uses a well-qualified and experienced group from SJRG to conduct its hedging activities.

SJRG has been involved in commodity trading for many years. LDCs of SJG's size generally do not have similar resources in house. In the absence of the SJRG resources available to it, developing a hedge program could present a significant stretch of SJG's staff capabilities.

- d. SJG financial hedges have been of the type and at the levels called for by the non-discretionary element of its approved program; however, particularly with the beginning of use of the discretionary element, scheduled non-discretionary transactions would better support dollar-cost-averaging.**

The chart below shows the effect of the Company's hedging program to date. The effect of the hedges is shown as an adjustment to the weighted average commodity cost (no transportation or storage charges) of the Company's flowing gas supplies. The weighted average commodity cost of the Company's gas in storage is also shown for comparison. Stored gas and flowing supplies are combined into the commodity cost applied to the Company's Gas Adjustment Clause. The chart shows that both financial hedges and stored gas had the effect of increasing the commodity cost of gas through much of 2001 and 2002, but both have reduced SJG's commodity cost since then.

Table IX-1. Hedging Effects on Cost Applied to G.A.C.



e. The use of a risk management committee and its comprehensive role provide an adequate framework for controlling SJG hedging activities.

The RMP outlines a comprehensive role for the risk management committee. The RMP adequately addresses both credit and liquidity risk, which typically comprise weak points in utility risk management programs.

The mechanics of deal paper flow also reduce the possibility of unauthorized trades. Deals must get with both the trading group and accounting group; the two groups reconcile their position reports at the end of the month; access to the trading system is limited and documented; position reports go to the BPU on a quarterly basis.

f. The use of NYMEX futures as the predominant element of SJG's hedging transactions is appropriate.

NYMEX-referenced instruments offer SJG a number of advantages. Many of these advantages, which include the following, do not exist in the over-the-counter market for options:

- NYMEX prices reflect the Gulf Coast market where the Company buys much of its physical supply
- NYMEX prices are readily available
- There is good liquidity throughout the Company's time horizon for its hedge program (18 months)
- NYMEX participants must demonstrate credit-worthiness before the brokerage houses will open accounts for them.

The utility can improve the price certainty of its commodity supply portfolio through a number of means, including NYMEX contracts, custom-tailored derivatives (*e.g.*, puts and calls), fixed-price purchases, or some combination thereof. The RMP does not limit the Company to any particular type of hedge instrument. The non-discretionary program uses NYMEX futures, however, and the discretionary program to date has used price *triggers* in its gas-purchase contracts that are linked to the NYMEX. The discretionary program has also used collars and options on occasion, but have no such instruments now.

Derivative deals (options) take place with counter-parties; there is no NYMEX analog in the derivative markets. A party generally finds it difficult to unwind an option deal that has gone bad; avoiding them constitutes a strength of SJG's hedging approach. It is encouraging that management has recognized market liquidity as a concern in developing its hedge portfolio.

g. SJG is in violation of its limit on open positions.

SJG's risk policy set limits on the *open positions* the Company may hold at any one time. In the case of NYMEX contracts, the limits are 300,000 Dth with no more than 200,000 Dth in any one month. Each NYMEX gas contract is for 10,000 Dth. Thus the total NYMEX contracts that may be open at any time is 30 (300,000/10,000). The Company's current non-discretionary hedge program totals about 300 open contracts. SJRG and SJG believed that they comply with applicable limits. They do not consider the vast majority of these 300 contracts to be open, because:

- Ownership of the contract had transferred between SJRG and SJG; they consider the act of executing the buy/sell on the day the contract was purchased as *closing* the transaction.

- Or, the contracts were *closed* because they would eventually be sold to SJG.

Liberty believes it is indisputable that the positions under these contracts are *open*. SJI is contractually obligated to settle those contracts no later than their settlement dates. The buy/sell arrangement between SJG and SJRG may support technically the claim that the utility has no open positions, because they remain on SJRG's books for the duration. For practical purposes, however, SJG has the open positions, because the buy/sell agreement between SJG and SJRG financially commits SJG to the contracts. Therefore, substantively, SJG has the open positions.

To further illustrate the consequences of the SJG position, if all hedge positions (not just NYMEX contracts) taken on behalf of SJG are viewed as *sold* because their costs will ultimately be blended into the utility's WACOG, then there can never be any *open* positions. In that case, the entire subject of position limits as a risk management tool for the utility becomes moot.

It is important to consider why limits should be placed on open positions in the first place. The primary concern with respect to open positions is that a sudden move in the market may expose a holder to large margin calls or significant losses. The open position limit attempts to establish a rough cap on potential losses. The eighteen-month spread in SJG's non-discretionary portfolio with purchases made at many different prices would mitigate the impact of any sudden price moves. Nevertheless, SJG's NYMEX exposure greatly exceeds the RMP limits. Moreover, the attitude that the hedges represent *sold* gas (albeit at some unknown price) contravenes the hedge program purpose of mitigating future commodity price increases.

Moreover, this apparent confusion over what constitutes an 'open' position is carried over into SJG/I's mark-to-market reports. Those reports do not show non-discretionary positions. It is also difficult to determine how much impact the non-discretionary hedge program has had on the monthly WACOGs.

In comments on a draft of this report, the Company argues that this issue is one of semantics. The very nature of hedging, according to the Company, requires someone to purchase NYMEX contracts from one party and to sell to another. (SJG in this case.) The two transactions taken together close the position. The Company says that it will amend the wording of its Risk Management Policy to clarify this issue.

E. Recommendations

33. Develop more specific objectives for the SJG hedging program.

The Company's price stability objectives should be expressed in one of the following ways:

- Price not to exceed, or
- Prices shall be within a target range of, or
- Percentage change from one month to the next should not exceed xx.

Any one of these quantifications is within the reach of the current program. The key change is to manage the program so that the hedges in place do not cause the utility's WACOG to remain high in a declining market. Tactically, that would mean varying the amount of gas hedged

depending on market trends, as opposed to the current approach which buys two contracts a month for the next eighteen months regardless of what is happening in the market.

The Company's current hedge position has benefited from a generally rising market over the past two years. Should prices decline, the current approach could easily produce higher-than-market WACOGs. Liberty believes that if the Company implements a price-sensitive approach to its stabilization efforts, the goal of mitigating rising commodity costs is more likely to be achieved.

34. Use SJRG's expertise in the conduct of SJG's discretionary hedging program.

Liberty does not know in any detail what the utility's plans are with respect to the conduct of its discretionary hedging program. There is concern, however, that the basic premise of the Planalytics model is not consistent with price theory as it applies to openly-traded commodities; *i.e.*, that all relevant information is in the current price. Moreover, the major trading firms employ private weather forecasting services that are at least the equal of the long-range weather information that SJG might use to run the model. Thus, there should be hesitance in accepting that the model alone will spot a gas-price anomaly on the basis of long-range weather forecasts.

SJG does have access to the experienced trading operation of its affiliate, SJRG. Liberty recommends that the utility draw on SJRG's expertise in conducting its discretionary program.

35. Revise the mark-to-market reports to reflect a more comprehensive definition of open positions.

SJG's current operating procedures ignore its risk management policy on this point. While it could be argued the open position limits are too low given the percentage of total commodity demand the Company wants to hedge, nonetheless the position limits along with the rest of the RMP exist to prevent financial disasters brought on by imprudent trading activities. The situation is further compounded by a lack of accurate mark-to-market reports.

The entire subject of risk exposure limits needs to be rethought after SJG sets a price band for its hedge program. Thereafter, SJG should submit a new RMP outlining both its price bands and positions limits.

The Company's position on this issue, as noted above, is that the purchase of a NYMEX contract from one party, combined with a sale of an equivalent amount of gas to another (which is how SJG's hedging program is accomplished), constitute a "closed" position. Liberty does not necessarily disagree. Our concern is that effective, auditable controls on the Company's energy trading activities be in place, and that the Company make use of those controls to manage effectively the very real risks associated with trading.

X. Affiliate Gas Supply Relationships

A. Background

SJG, SJE, SJRG, and Marina comprise SJG's affiliates with significant gas supply operations. Chapter I. of this report provides background information on these affiliates.

The parent company's 2003 Annual Report and SEC Form 10-K report only two relationships among these affiliates:

- SJRG buys most of SJE's gas, and delivers it to city gates, for subsequent re-delivery to SJE's customers; and
- SJRG conducts price-risk management (hedging) programs for all affiliates.

It is clear that there are other relationships, however. Most of SJE's customers are behind SJG's city gates, for example, and SJRG is both a supplier to and a customer of SJG (for capacity releases and off-system sales). This chapter identifies and explores the relationships that affect the utility's gas-supply function.

B. Summary of Audit Activities

An important objective of this part of the audit has been to identify the nature and the dimensions of the relationships between SJG and its unregulated affiliates. Liberty performed an examination of the trading activities of SJI's energy-trading entities. SJE is a buyer of long-term and spot-market gas. Most of its commodity transactions occur with SJRG, which serves essentially as a full-service provider of natural gas commodity to SJE. The relationship between SJG and SJRG is more complex. They routinely provide similar services to the same counterparties in the same geographic area. These activities include the buying and selling of term and spot-market gas. In essence they compete for trades. The transaction testing section of this chapter describes detailed steps taken to examine the trading activities of these two entities.

The fact that SJG and SJRG compete with one another requires such an examination to ensure that trades are not being assigned inappropriately to an affiliate. The existence of margin sharing, for example, creates an incentive for assigning trades based on profitability. There is a splitting of profits between utility customers and shareholders for SJG off-system sales. SJRG does not have to share margins with customers, however. As Liberty has found elsewhere, an asymmetric distribution of margins can have an inappropriate influence on which affiliate gets to make trades before the fact, and on which is assigned certain trades during or after the fact.

The criteria that Liberty applied include the following:

- Whether direct relationships (*e.g.*, supplier/purchases, agent/principal) are conducted at arm's length; *i.e.*, do the terms of these relationships reflect terms that prevail generally and that the respective affiliates would agree to in a similar transaction with an unaffiliated party
- Whether indirect relationships (competition for the same customers, or access to the same resources; *e.g.*, the same pipeline capacity), reflect favoritism toward certain affiliates, particularly those that do not share margins with utility customers

- Whether all affiliates have access to adequate resources, such as staffing, computer systems, and access to capital.

C. Dimensions of the Relationships

1. Findings

SJE's Relationship with SJG

SJE has most of the customers in SJG's gas transportation program. This chapter analyzes the importance of SJG's markets to SJE. SJE has approximately 75,000 residential customers, all of whom are located behind SJG's city gates. That number represents about 80 percent of SJG's residential transportation customers. SJE serves about 70 percent of SJG's commercial and industrial transportation customers.

Approximately 80 percent of all of SJE's sales volumes (residential, commercial, and industrial) go to customers behind SJG's city gates. SJE's business has changed and grown in the last 10 years, but its relationship with SJG has remained similar.

SJG has also been an active gas supplier to SJE since 1999. SJG has been the second largest supplier to SJE for each year since 1999. These volumes represent less than 10 percent of SJE's total purchases in each of the last five years, however. Similarly, SJG's sales to SJE have generally been less than 10 percent of SJG's sales of this type (off-system sales). The chart below shows the volumes and costs associated with these transactions.

Table X-1. SJG Sales and Capacity Releases to SJE

Year	Volumes	Dollars
Releases		
	553,880	
Totals	553,880	
Sales		
1999	1,435,200	
2000	2,732,750	
2001	1,254,099	
2002	2,899,313	
2003	4,329,730	
2004	1,432,500	
Totals	14,083,592	

Volumes are in Dth.

SJRG's Relationship with SJE

SJRG has essentially been a full-service wholesale supplier of natural gas to SJE since 1999. SJRG has provided SJE with over 90 percent of its supply requirements during this time. All other counterparties, including SJG, combine to make up the remaining amount. The chart below shows the number of transactions, volumes, and dollars associated with SJRG's relationship with SJE.

Table X-2. SJRG Sales to SJE

Sales	Volumes	Dollars	Number
1999	7,149,100		326
2000	11,744,513		259
2001	14,348,596		572
2002	15,804,167		1,150
2003	24,157,431		1,928
2004	28,872,616		4,690
Totals	102,076,423		8,925

Volumes are in Dth.

SJE is an important SJRG customer. Sales to SJE make up a significant portion of SJRG's business. The amount of gas sold and revenues from these sales have increased dramatically since 1999, as has the percentage of SJRG total sales that these sales represent. These percentages have nearly doubled in the last five years. The chart below shows SJE's proportion of total SJRG sales in volume, revenue, and numbers of transactions each year.

Table X-3. SJE Share of SJRG Annual Sales

Year	Volume	Revenue	Number
1999	22%	23%	18%
2000	23%	23%	17%
2001	23%	23%	29%
2002	32%	33%	30%
2003	40%	39%	31%
2004	37%	38%	34%

SJRG also provides financial services to SJE by handling all of SJE's hedging activities. SJRG performs similar services for its other retail marketing clients. Those companies have customers who want a fixed price for their gas supply. When these retailers enter a contract providing for a fixed price, SJRG buys a financial instrument (or set of financial instruments) that allows SJRG to provide the supply to the retailer at a fixed price.

SJRG's Relationship with SJG

SJRG operates as a wholesale gas-trading affiliate of SJG, but does not act as asset manager, nor does it buy or sell gas on behalf of SJG. This relationship distinguishes SJRG's role from what often happens in utility holding companies with a trading affiliate. It also reduces interactions between the two, and provides less opportunity for cross-subsidization of non-utility operations. SJRG and SJG each holds its own assets, and trades for its own account. SJG, unlike SJE, purchases its own gas to satisfy its system supply requirements. SJG also operates its own off-system sales program and makes its own capacity releases in order to reduce the customer costs associated with its excess capacity and commodity. The only function that SJRG conducts for SJG is the execution of the financial transactions associated with SJG's hedging program. Section IX of this report describes how the program is conducted.

The following chart illustrates the different types of transactions that have occurred between SJRG and SJG since 1999.

Table X-4. Types of SJRG/SJG Transactions

Function	1999	2000	2001	2002	2003	2004
Gas Sales to SJG	x	x	x	x	x	x
Gas Purchases from SJG	x	x	x	x	x	x
Purchases of Capacity from SJG	x	x	x	x	x	x
Storage Services Sold to SJG				x	x	
Daily Swing Service (SJRG sells to SJG)			x			
Peaking Services (SJRG sells to SJG)	x					

The first three functions listed are consistent with the relationship the SJG has or could have with any counter-party that SJG considers to have good credit standing. SJG performs these activities on a frequent basis with a number of unaffiliated counterparties. SJRG has undertaken the second three functions with unaffiliated counterparties in the past, but such relationships are not as frequent and as common as gas sales, gas purchases, and the releasing of capacity.

In the winter of 2002 - 2003, SJRG provided a customized storage service to SJG. SJRG has long maintained storage capacity under a contract with a storage subsidiary of National Fuel Gas Corporation. SJG previously had a storage agreement for similar services with a pipeline company. SJRG offered a lower price for the service during that particular winter season; therefore SJG made the change.

In the summer of 2001, SJRG won a bid through an RFP process to provide daily swing service to SJG in Transco Zone Three. In 1999, SJG and SJRG reached an agreement where SJRG made available peaking service for any 10-day period between July 1, 1999 and March 31, 2000.

The number and volume of SJRG sales to SJG increased significantly from 1999 to 2001. SJRG's sales transactions with other counterparties increased steadily throughout the period. As a consequence, the percentage of SJRG's business that sales to SJG represents has declined. Table X-5 illustrates these points.

Table X-5. SJRG Sales to SJG

Sales	Volumes	Dollars	Number	Share
1999	2,121,660		67	6.5%
2000	3,472,292		57	6.8%
2001	8,022,277		122	13.0%
2002	4,017,773		407	8.1%
2003	3,924,273		331	6.5%
2004	3,616,310		385	4.6%
Totals	25,174,585		1,369	

Volumes are in Dth.

SJRG has been a supplier of gas to SJG. The chart below shows SJG's gas purchases from SJRG, from all counterparties, and what percentage of total purchases that SJG's transactions with SJRG represent.

Table X-6. SJG Total Purchases from SJRG

	1999		2000		2001	
	MMDts	%	MMDts	%	MMDts	%
SJRG	2.1	3.1%	3.1	4.9%	7.6	11.5%
Total	68.8		62.9		65.9	
	2002		2003		2004 (Jan-Oct)	
	MMDts	%	MMDts	%	MMDts	%
SJRG	3.2	6.0%	3.8	7.2%	3.6	8.1%
Total	53.1		53.1		44.7	

SJG has also been a significant supplier to SJRG. In 2000 purchases from SJG accounted for 17 percent of SJRG's total purchases, which made SJG this affiliate's largest supplier of gas commodity. SJG remained SJRG's largest supplier of gas through 2002. The amount of gas SJRG purchases from SJG declined considerably in 2003 and 2004. The next table illustrates these points.

Table X-7. SJRG Purchases from SJG

Purchases	Volumes	Dollars	Number	Share
1999	3,826,947		64	11%
2000	8,628,531		69	17%
2001	6,292,426		67	10%
2002	5,157,865		221	11%
2003	2,308,483		82	4%
2004	739,595		17	1%
Totals	26,953,847		520	

SJRG has also been one of the largest buyers of released capacity from SJG. The table below shows how much capacity SJG has released to SJRG, and what percentage of SJG's total annual capacity releases that these transactions represent. The table shows that SJG's releases to SJRG have not amounted to more than 12 percent (by volume) of SJG's total releases in the past six years.

Table X-8. Percentage of SJG's Capacity Releases made to SJRG

	1999		2000		2001	
	Dth	%	Dth	%	Dth	%
SJRG	3,785,000	12%	4,362,765	11%	1,535,000	5%
Total	30,358,015		38,718,596		28,301,232	
	2002		2003		2004	
	Dth	%	Dth	%	Dth	%
SJRG	599,987	2%	4,625,068	11%	3,665,702	8%
Total	39,570,367		42,763,476		45,859,058	

The amount of gas sold by SJG to SJRG has declined over the same period, from a peak of 7.9 MMDth in 2000 to almost none in 2004. The following chart shows that SJG's total off-system sales volumes have also declined over the period, and that the proportion of those sales made to SJRG has declined even faster.

Table X-9. Percentage of SJG's Off-System Sales made to SJRG

	1999		2000		2001	
	MMDts	Share	MMDts	Share	MMDts	Share
SJRG	4.4	10.0%	7.9	20.1%	6.3	20.1%
Total	44.1		39.4		31.4	
	2002		2003		2004	
	MMDts	Share	MMDts	Share	MMDts	Share
SJRG	5.2	16.7%	2.3	8.2%	0.7	3.2%
Total	31.2		28.1		22.1	

Marina's relationship with SJE, SJG and SJRG

SJE is the affiliate with the most extensive and direct relationship with the Marina. Marina's major activity is a thermal energy complex in Atlantic City that supplies hot water, chilled water and back-up electricity service to the *Borgata* hotel and casino. SJE provides natural gas commodity to the complex, and buys electricity from it. SJG transports the gas from its city gates to the complex. SJE provides the gas supply under a five-year contract, signed in October 2003. The gas transportation is provided pursuant to SJG's tariff, Rate Schedule LVS (Service Agreement dated April 1, 2003).

Other Marina facility-operation projects, *e.g.*, Mannington Mills and Resorts Atlantic City, require the use of natural gas, but Marina does not provide it. In those instances, the host facility meets the gas commodity needs. Marina also may engage in discussion with SJE on electric and gas commodity pricing.

SJRG does not provide any services to Marina on a regular basis. Marina does not have a direct contractual relationship with SJRG. Marina may contact SJRG for assistance in obtaining commodity price information if a potential project involves a long-term gas contract.

2. Conclusions

a. SJE, SJRG and Marina operate viable entities independently of their relationships with SJG.

Customers behind SJG's city gates account for 96 percent of SJE's customers and 78 percent of its volumes. Nevertheless, SJE appears to be an effective competitor in other New Jersey LDCs' service territories, as well. At the end of 2004, for example, SJE had almost 1,100 customers in PSE&G's service territory, almost 460 in the New Jersey Natural region, and another 110 in Elizabethtown Gas Company's territory. SJE is a viable entity on its own, and does not need its relationship with SJG in order to survive as a going concern.

Similarly, SJRG has several distinct lines of business, none of which depends on its relationship with SJG. SJG was in SJRG's top five counter-parties on both the buy side and the sell side from 1999-2003, but in none of those years did transactions with SJG exceed 17 percent of SJRG's total buy-side or sell-side volumes. In recent years, volumes transacted with SJG have declined as a proportion of SJRG's total volumes on both the buy side and the sell side.

Marina Energy also operates a viable business that does not depend on a relationship with SJG. SJE is an important supplier to and customer of Marina.

b. The general structure and nature of the gas-supply relationships among the SJI affiliates has been appropriate.

SJRG competes in wholesale markets against SJG for both purchases and sales. The nature of their respective businesses is different, however, and SJRG's business includes activities (such as storage arbitrages, for example) that are not suitable for a utility company.

Some lines of SJRG's business, such as selling to retail marketers, could be conducted by the utility as part of its off-system sales program. SJG would have to hire additional staff in order to conduct these activities, however, and would likely have to acquire additional gas-supply resources not necessary for the conduct of the utility business. There is no indication that SJI has structured these businesses to the disadvantage of utility operations.

SJE's competition comes from other retail marketers, rather than the utility *per se*. New Jersey policy encourages the entry of non-utility suppliers into retail gas markets in the State. SJE has a presence in the other LDCs' service territories, as well as SJG's. The creation of a retail SJI subsidiary and its ability to compete for customers in the utility's service territory have been appropriate, and have contributed to a relatively more competitive environment in the region.

Finally, the parent company's development of Marina as a customer for energy and energy services has also been reasonable. The utility's other customers are helped by growth in the Company's markets, as growth spreads fixed costs over a larger customer base. SJI's formation and development of Marina as a customer for gas and gas transportation services provides a positive contribution to the utility's gas-supply operations.

c. The relationships among SJG's affiliates have generally been at arm's length.

The utility treats SJE as it does other marketers, and deals with SJRG in the same manner as it does other suppliers and customers for gas. The utility provides services to Marina pursuant to its filed tariff and an established Rate Schedule.

As discussed in Chapter IV of this report, Liberty is troubled by the lack of transparency in SJG's conduct of its secondary-market program, particularly its capacity releases. As noted above, SJRG has been a substantial customer for capacity releases by SJG, and SJRG's share of the released capacity has stayed about the same even as the total volume released has increased.

It seems clear to Liberty that SJRG is quite knowledgeable about what capacity the utility has available for release, and we would be surprised if SJRG is not among the first to call when the utility is ready to entertain offers for release. Liberty observes from the capacity release data, however, that there are other, unaffiliated counter-parties, albeit a small number of them, who have a similar relationship to the utility's capacity-release program. Liberty cannot go so far as to say that SJRG is treated better than those counter-parties.

d. There is adequate separation and independence of utility operations from those of its affiliates who conduct gas-supply transactions.

SJG's off-system sale and gas supply program are run as a completely separate operation from SJRG's trading activity. The offices are located in McKee City, New Jersey and Bedford (a suburb of Fort Worth), Texas, respectively. Thus there is physical separation of the offices and employees. SJG and SJRG do not have any common employees who perform work for both the utility's gas supply program and SJRG. Each entity employs their own traders, gas schedulers and pipeline nominators, and deal entry personnel. The compensation of SJRG personnel is not linked with that of SJG gas supply and OSS operations. While it is true that margins from SJRG are kept by the company, while those from the OSS and capacity release program are split amongst ratepayers and shareholders, there is no financial incentive for the SJG personnel who perform these functions to make deals with SJRG that would increase SJRG profits to the detriment of SJG.

3. Recommendations

36. The parties to the Company's ongoing rate case should address the supplier-of-last-resort (SOLR) issue, and its relationship to the conduct of the Company's secondary-market program.

Detailed recommendations on this point were presented in Chapters IV and V of this report.

D. Patterns in the Relationships

1. Findings

Capacity Release

Liberty compiled summary transaction data to examine whether the distribution of SJG capacity releases to SJRG and SJE differs from the distribution of its off-system sales and capacity releases to unaffiliated counter-parties. Liberty obtained SJG capacity release data for fiscal

years 1999, 2000, 2001, 2002, 2003 and 2004. The following data represents SJG capacity releases to its affiliates on an annual basis.

Table X-10. SJG Capacity Release to Affiliates

	1999		2000		2001	
	Dth	%	Dth	%	Dth	%
SJRG	3,785,000	12.5%	4,362,765	11.3%	1,535,000	5.4%
SJE	553,880	1.8%	-		-	
Total	30,358,015	14.3%	38,718,596	11.3%	28,301,232	5.4%
	2002		2003		2004	
	Dth	%	Dth	%	Dth	%
SJRG	599,987	1.5%	4,625,068	10.8%	3,665,702	8.0%
SJE	-		-		-	
Total	39,570,367	1.5%	42,763,476	10.8%	45,859,058	8.0%

Non-affiliated energy marketing and services companies account for the vast majority of SJG's capacity releases. SJRG accounts for an 8 percent annual average of SJG's capacity releases across the period. SJG has not released capacity to SJE since 1999. SJRG was one of the top five buyers of released capacity from SJG in every year except 2001. The preceding table shows, however, that in none of those years did releases to SJRG exceed 11.7 percent of the total in that year.

Liberty also analyzed SJG's capacity-release distribution on a monthly, seasonal, and annual basis. Monthly transactions comprise those entered into for the flow of gas for exactly one month in duration. Seasonal transactions consist of deals completed for deliveries across the duration of the summer season (April through October) or of the winter season (November through March). Annual transactions have delivery durations of 12 months. Annual deals generally do not use calendar years to set delivery durations. Generally, the deliveries begin at the beginning of either the summer or winter season.

The following table presents SJG capacity releases by duration of release.

Table X-11. SJG Capacity Release by Transaction Type

Year	Volume (Dts)			Dollars		
	Monthly	Seasonal	Annual	Monthly	Seasonal	Annual
1999	3,207,135	21,650,880	5,500,000	\$120,903	\$2,643,542	\$1,430,000
2000	1,522,500	35,345,596	1,850,500	\$298,996	\$3,632,447	\$479,300
2001	905,000	24,601,232	2,795,000	\$122,500	\$4,107,551	\$1,369,700
2002	904,987	38,045,380	620,000	\$48,300	\$5,198,387	\$258,482
2003	6,430,068	30,233,408	6,100,000	\$249,957	\$5,326,242	\$1,109,626
2004	5,015,000	35,610,536	5,233,522	\$156,900	\$4,672,140	\$2,672,004

Affiliate Transactions

Liberty compared SJRG and SJG sale and purchase transactions in order to assess the independence of the transactions, given the two affiliates' operations in common markets and with common counter-parties. Specifically, Liberty reviewed the following relationships between SJG and SJRG:

- Whether SJRG's purchases from SJG occur disproportionately during periods of high demand
- Whether SJG and SJRG transaction prices differ with similar unaffiliated counter-parties.

Seasonal Analysis

SJG maintains a portfolio of firm gas-supply resources to ensure that its customers have gas service during peak periods. SJRG, on the other hand, depends more on in-market purchases to supply its customers. SJRG generally buys interruptible transportation services, or acquires firm transportation in secondary markets when necessary.

With this difference in the mix of supply resources, a question arises regarding whether the utility company's more-firm (and thus more-costly) resources are being used to "back-stop" the affiliate's activities when weather conditions result in reduced availability of less-firm transportation services. This question is especially relevant in view of SJG's very conservative view of its requirements for capacity, and its very large secondary-market program.

To test this proposition, Liberty compared seasonal patterns in the utility's off-system sales with SJRG to patterns in its off-system sales to all customers. The comparison was done using SJG's Off-System Sales database. The table below shows the monthly distribution of SJG's off-system sales to all customers. As might be expected, off-system sales increase during the winter months, when space-heating demand for gas is highest. The second table shows the proportion of off-system sales in each month made to SJRG. The table shows that, through the winter of 2002-2003, proportionate sales to the affiliate were highest in the winter months. The proportions have declined since the winter of 2001-2002, however.

Table X-12. SJG Off-System Sales

	1999	2000	2001	2002	2003	2004
Jan	5,197,355	6,190,360	6,098,736	5,439,111	6,183,068	1,460,358
Feb	5,085,596	4,949,416	4,697,690	5,352,459	4,398,090	1,104,762
Mar	6,494,664	5,763,366	4,756,735	4,516,266	5,470,863	2,120,946
Apr	3,685,694	5,039,303	1,889,059	2,279,741	2,171,997	1,766,397
May	4,255,578	4,383,370	2,851,651	2,680,110	2,170,746	1,752,254
Jun	4,120,070	2,653,735	2,159,019	3,155,400	2,087,102	1,388,265
Jul	3,438,052	2,290,307	2,702,912	2,438,183	1,706,191	1,413,514
Aug	4,065,660	3,772,525	2,145,320	2,735,125	2,533,306	1,612,083
Sep	2,521,597	3,329,350	1,997,575	2,680,970	2,397,494	1,466,982
Oct	3,331,693	2,581,239	2,551,206	2,361,783	2,896,466	1,742,340
Nov	2,894,037	5,355,727	3,630,969	4,224,825	3,692,578	NA
Dec	7,104,117	4,072,110	4,389,803	4,761,350	3,748,262	NA
Annual	52,194,113	50,380,808	39,870,675	42,625,323	39,456,163	15,827,901

Table X-13. SJG Sales to SJRG: Percentage of Total Off-System Sales

	1999	2000	2001	2002	2003	2004
Jan	1.69%	29.24%	30.87%	21.33%	8.79%	0.45%
Feb	13.56%	23.89%	45.72%	20.28%	14.45%	0.92%
Mar	7.01%	20.99%	26.71%	26.81%	8.77%	0.25%
Apr	7.55%	18.44%	0.78%	1.33%	2.76%	1.58%
May	6.44%	23.72%	1.07%	2.43%	0.09%	1.00%
Jun	5.05%	12.62%	0.02%	0.08%	0.12%	1.53%
Jul	1.06%	9.14%	5.34%	2.01%	0.07%	0.18%
Aug	2.10%	9.10%	2.09%	7.66%	0.58%	0.00%
Sep	8.92%	9.96%	0.80%	2.09%	0.00%	0.00%
Oct	6.98%	10.72%	3.02%	3.02%	1.49%	3.50%
Nov	26.22%	20.18%	30.11%	6.35%	10.35%	NA
Dec	25.09%	23.59%	26.62%	16.86%	4.30%	NA
Annual	9.80%	19.27%	19.73%	11.68%	5.89%	0.96%

A complete analysis on this point would examine capacity releases, as well as off-system sales. However, as noted previously, data constraint and consistency issues have prevented a more complete examination of patterns in capacity releases. Liberty observes, however, that, as SJG's off-system sales to SJRG have decreased, SJG's capacity releases to SJRG have increased.

Matching Transactions Analysis

Liberty also performed analyses to determine whether there were any patterned differences in the prices that SJG and SJRG paid or received for similar transactions with unaffiliated counter-parties. SJG and SJRG conduct business in the same markets and thus compete with one another and similar counter-parties when attempting to maximize transaction profitability. Liberty

therefore tested for indications of a lack of independence or arm's-length dealing that may have adversely affected the prices SJG paid or received. Liberty compiled gas sales transaction data from SJG's *Lotus Approach 123* database and SJRG's *RADAR* database. Liberty obtained data for fiscal years 1999, 2000, 2001, 2002, 2003 and 2004. The data then available ran through October 2004. Liberty filtered all sales, on an annual basis, in order to produce data from which to compile comparable sales transactions.

Liberty initially identified the following specific criteria for defining a common transaction:

- Common date for agreeing to sale
- Common beginning and ending dates for the gas that flowed under the sale
- Common delivery points for the gas that flowed under the sale.

Data constraints and restrictions make direct comparison of prices problematic. Liberty therefore revised these criteria to match the data that the company systems were capable of producing. The SJRG and SJG transaction databases are completely separate database platforms. They capture many similar data fields required to conduct daily business and track historical transactions; however, there were, for Liberty's testing purposes, a number of important differences. SJG and SJRG do not classify transaction transfer (delivery/receipt) points in a similar manner, for example. SJG generally notes the actual meter to which the gas is delivered. In contrast, SJRG's transfer points are not meter-specific, but are generally defined by pipeline rate zone.

Liberty met with SJG's Director of Gas Supply & Off-System Sales, and the Vice President of SJRG, to resolve the issue regarding common transfer points. SJG and SJRG personnel submitted a list of all transfer points found in their respective databases, and reclassified such transfer points by pipeline rate zone. Liberty determined that the redefined transfer points provided sufficient commonality between the SJG and SJRG data to allow a baseline common-sales-transaction analysis.

Liberty had to make additional assumptions to support this testing. SJG's database does not capture all of the necessary information required to make an optimal common-sales-transaction analysis. The SJG database does not capture the dates on which sales are made, for example. Based on its understanding of general industry practice, Liberty decided that it was appropriate to assume, in the absence of more specific company information, that all daily transactions were entered into the day before the start of gas delivery. Liberty reviewed this assumption with SJG and SJRG personnel as part of efforts to address the lack of deal-date information in the SJG database.

Liberty was not willing to make the same assumption for term transactions. Experience teaches that such deals are made across many months prior to the start of delivery. This long span means that otherwise-similar deals could have been made under significantly different market conditions. Accordingly, Liberty decided that the failure of SJG to capture deal dates rendered an analysis of common term transactions infeasible. Liberty removed such transactions from its test bed of transactions.

Ideally, even time of day merits consideration, especially for daily transactions when the market is particularly volatile. Neither the SJRG nor the SJG database captures information listing the time of day at which a transaction is agreed upon by traders. This lack is not uncommon. Moreover, absent specific reason to conclude otherwise in a specific case, Liberty would generally expect on a “going-in” basis that this variable would be random in effect in any event. That is, over time, the time-of-day variable would be as likely to produce relatively lower prices as it would to produce relatively higher prices for either affiliate’s transactions.

Given the data constraints and the differences in available data between the SJG and SJRG databases, Liberty’s adjusted criteria for defining common transactions became:

- Common beginning and ending dates for the gas that flowed under the sale
- Common pipeline zones for the gas that flowed under the sale.

Liberty then compared the prices SJRG received for sales and the prices that SJG received for sales. Liberty’s comparison sought to determine whether the differences varied from a random distribution. Liberty’s initial review showed the following results.

Table X-14. Preliminary Common Sale Price Comparison

	SJG Price Higher	SJRG Price Higher	Prices Equal	Total Match Transactions
2001	34.01%	61.22%	4.76%	294
2002	35.72%	52.45%	11.82%	1548
2003	20.34%	66.61%	13.05%	1180
2004	23.45%	61.96%	14.59%	857

Many times the counter-party who bought gas from the utility and the counter-party who bought gas from SJRG would be the same across several groups of transactions. For example, an SJG sale to “Counterparty A” would match a SJRG to “Counterparty B” on several different days. Liberty sought to verify that the reclassification of transfer points to pipeline rate zones did not introduce error into the analysis. Liberty also sought to secure from the companies any information about their transactions that might introduce a bias.

Liberty discussed the preliminary analysis of the sales data with SJG’s Director of Gas Supply & Off-System Sales and the Vice President of SJRG. The Vice President of SJRG presented several plausible reasons that would influence the differences. Some of the variables mentioned consisted of ones that, over time, would be as likely to produce relatively lower prices as frequently as they would relatively higher prices. The Vice President of SJRG also observed that contract type or sales terms could have an influence. Type-of-contract and term-of-sales information is not electronically captured in the transaction databases.

SJRG’s Vice President presented several types of arrangements that included peculiarities that made them inappropriate for inclusion in the type of testing that Liberty sought to perform. These types include:

- Demand charge sales
- Index premium sales

- Intra-day sales
- Supplier arrangement sales.

Demand charge sales are arrangements in which the buyer pays SJRG a demand charge to reserve the sales quantity for the buyer at a previously-determined price. The specified price is generally linked either to a daily index price or a first-of-the-month index price. If prices are linked to a first-of-the-month index, the buyer will only receive delivery of the gas when the spot-market price is above the indexed price, unless there is a minimum-monthly or annual-take clause in the contract.

Index-premium sales contracts provide for the right to call for gas at a specified premium to published indexes. These premiums are usually significant enough to protect the seller, and may be accompanied by a minimum or maximum number of days that the buyer has available to purchase the gas at that price.

Intra-day sales include any sales made out of the regular nomination cycle. Gas must find a location on a pipeline every day. Gas nominations for the next day's flow are typically due by 12:30pm EST. Pipelines allow changes to these nominations through the day of flow, but a different set of rules on usage and confirmation processes are required. Intraday transactions require other gas transfers to cover the initial destination for the gas. Intraday transactions carry a premium, generally 2 to 6 cents, due to the difficulty of nominating and tracking the unplanned transactions.

Supplier-arrangement sales generally consist of transactions with energy marketers, such as SJE. These sales are made to customers for whom SJRG is the sole supplier. SJRG and its customer negotiate a price that will carry a premium to the daily market, the monthly market, or the cost of supply. SJRG, as a service for the negotiated premium price, assumes its customer's upstream capacity management, purchase functions, credit and risk functions, and scheduling functions. The resulting price premium provides compensation for providing these functions.

It also became clear that the (Transco) Leidy Line's classification as a pipeline rate zone was problematic. The Leidy Line is technically located in its reclassified rate zone, but is not comparable to other points reclassified to the same zone. The response to Data Request 504 states that gas sales at Leidy are considered to be Zone 6 Non-New York. The Leidy Line is primarily a receipt point into the Transco system from storage systems on National Fuel and CNG pipelines. Leidy-Line gas is not comparable with other delivery points in Zone 6 Non-New York because transportation costs must be incurred to move Leidy-Line gas onto Transco. Gas bought at Zone 6 Non-New York requires no additional costs when sold within the same zone. Variable costs to transfer gas from the Leidy Line to Zone 6 Non-New York are dependant upon the price of fuel, but generally vary between 4 and 7 cents.

Liberty conducted a second analysis to determine the impact of these contract-difference and zone-reclassification issues. Liberty discovered that SJRG demand-charge sales inflate the price of these transactions when compared to normal daily SJG sales. Liberty also examined the effect of intra-day sales. Intra-day sales are generally priced at an index price plus a premium and thus were eliminated from Liberty's analysis. Prices of intra-day sales are higher than other sales

that, on paper, seem comparable. Liberty's review found that SJRG was the gas supplier to two counter-parties on a regular, contracted basis. In contrast, SJG did make sales to a few energy marketers, but did not do so on a regular basis. Liberty therefore concluded that SJG, unlike SJRG, did not have any "negotiated-price" arrangements associated with regular supply arrangements. Liberty therefore removed from its common transaction database the following types of transactions:

- Demand charge sales associated with SJRG and SJG
- Intra-day sales associated with SJRG and SJG
- Supplier arrangement sales associated with SJRG
- All common transactions with Leidy Line as the original transfer point.

This modification caused the removal of transactions involving six counter-parties. Liberty performed a second analysis for 2003 and 2004. The following table represents the recalculated findings.

Table X-15. Second Common Sale Price Comparison

	SJG Price Higher	SJRG Price Higher	Prices Equal	Total Match Transactions
2003	32%	45%	23%	591
2004	42%	30%	28%	363

This second analysis shows no pattern that would suggest favored prices for SJRG.

Liberty also completed an analysis of common-purchase transactions for 2004. Liberty used similar methods, filters, and exclusions covered by the preliminary sales analysis. Liberty also excluded "term" transactions; *i.e.*, transactions of 30 days or greater duration. The following table suggests that SJRG did not obtain more favorable prices for the period analyzed.

Table X-16. Common Purchase Price Comparison

	SJG Price Higher	SJRG Price Higher	Prices Equal	Total Match Transactions
2001	34.36%	33.27%	32.36%	550
2002	31.71%	52.44%	15.85%	164
2003	38.74%	47.75%	13.51%	111
2004	24.57%	54.91%	20.52	346

SJG gas-purchase data is not captured by the same database that contains the sales transactions. SJG uses a single data sheet to tabulate all purchases on a monthly basis. SJG does not possess a purchase database capable of querying data in the manner employed for Liberty's off-system sales and capacity-release analyses.

2. Conclusions

a. Liberty's transaction analysis did not reveal a pattern of favoritism toward SJG affiliates.

As discussed above, Liberty conducted transaction testing to assess this question. Patterns found in our initial analysis were adequately explained by SJRG personnel.

b. Differences in transaction-tracking systems of the two affiliates made testing difficult.

As detailed in the discussion above, a number of assumptions had to be made in order to perform tests, and testing was extremely time-consuming. Had the transaction-tracking systems been more compatible, Liberty would have conducted additional analyses. Analysis of SJG and SJRG sales and purchases to affiliated and nonaffiliated counter-parties requires large volumes of data, however. For instance, SJRG sales data, retrieved from RADAR should match SJG purchase data from its database when transactions are completed between the two affiliates. When Liberty compared responses to data requests from SJRG to those from SJG, however, there were occasional mismatches.

Liberty asked the Company to address these mismatches. A common finding arose from cases where SJRG's RADAR database recorded transactions that either were not recorded by SJG's transaction database, or were recorded differently. For example, the SJG transaction database did not capture certain swap transactions with SJRG. In one case, SJRG sold system-supply gas to SJG in Transco Zone 6 (Non-New York), and in return, SJG sold the same amount of gas, at the same price, to SJRG in Transco Zone 5. SJG personnel stated that these transactions were not recorded because the swaps had no financial impact, and thus required no invoicing.

Liberty used SJRG transaction data to confirm the prices of the swaps from the buy and sell perspectives. SJRG's RADAR database captured the same volumes and price for both sides of these swaps. Complete SJG data summarizing transaction details, however, is not available to confirm the swap transactions from the utility perspective. SJG and SJRG personnel also provided assurances that these types of inconsistencies have been corrected on a going-forward basis.

3. Recommendations

37. Provide for more common transaction-tracking methods between SJG and SJRG.

A number of high-profile cases of abusive trading practices have caused financial harm to parent companies, and have occasionally resulted in criminal prosecutions. Thus, it is appropriate, and not suggestive of any wrongdoing at either SJRG or SJG, that the companies provide improved controls on the two affiliates' trading operations.

SJRG's system for tracking transactions (RADAR) is considerably more sophisticated than SJG's. SJG should upgrade its current transaction database to a more comprehensive and automated system. Implementation of the automated system should allow SJG to capture

detailed transaction data similar to data captured by SJRG's RADAR system. A new system should also include sufficient automated audit trails and controls similar to those in RADAR.

As also noted earlier, the parent company's independent accountants made some recommendations for the improvement of RADAR. Those recommended changes were for the protection of shareholder interests. Adequate protection of customer interests requires running the types of tests discussed in the body of this section. Liberty performed some of these tests, and found no evidence of impropriety or failure to act at arm's length. It proved substantially more difficult than it should have been, however, to perform the appropriate tests. Transaction testing needs to be made more effective and more efficient, in order to promote ongoing verification of the independence and prudence of operations.

Liberty performed sufficient transaction testing and discussion of its results with Company personnel to gain adequate comfort that there was no pattern of favoritism in SJG's dealings with SJRG. SJRG and SJG personnel spent considerable effort providing evidence of the commitment to an arm's-length relationship. The goal of the recommendation here is to make verification of performance under that commitment easier to demonstrate.

The RFP that helped form the basis for Liberty's work plans for this audit listed officer attention as an issue. Liberty did not find that significant officer attention has been paid to the issue of assuring arm's-length dealing in gas-supply transactions among affiliates. SJI should use the improved transaction tracking methods recommended here as the basis for regular reviews under the direction of a senior officer who has no gas-supply functions under him or her.

XI. Marketing

A. Background

This chapter addresses the following topics:

- The traditional role of marketing in utilities
- The role of the marketing organization on behalf of SJG
- A brief overview of the organization, roles, and activities of the SJI marketing group
- A review and analysis of the marketing plans of SJG and various affiliates
- The SJG free heater program, conducted during the second half of 2004
- The SJG radio and newspaper ad campaigns for the last two gas years

Traditional gas supply planning relies upon demand-side analysis and historic usage patterns and trends. Utilities analyze future demand by considering changes in demographics, growth or decline in business and industry, housing starts, and other factors using a variety of techniques and methods. Utilities also use historic data to consider trends in usage per member of various customer classes and subclasses. They examine historic growth rates by class and subclass, historic weather patterns and degree-days, and other factors. Planners then compare and reconcile a variety of projections and historic trends in order to develop a demand forecast.

There exists no linkage between SJI's Planning and Forecasting group (as noted later, the title is a misnomer) and the SJG gas supply planning group. The Planning and Forecasting personnel pass no information or data to the gas supply planners. The development of the forecast is discussed earlier in this report, in Chapter III, *Gas Supply Planning*. The market planning and forecasting group uses only broad demographic data to assist in targeting marketing programs. This group does not refine that data or provide it to the gas supply planners.

Liberty had expected to see significant interaction between the marketing and gas supply groups, and planned to address it in its audit work. Liberty did examine, however, the activities of the marketing planning and forecasting. This chapter discusses the results of that examination.

B. Findings

1. Overview of Marketing at SJI and SJG

The SJI marketing organization reports to an SJI vice president, who in turn reports to the SJI President and CEO. This group of 13 employees works under the direction of the Director of Market Planning & Forecasting. Two groups under this director, *Key Accounts Sales* and *Commercial Sales*, perform non-utility functions only; they support SJE's commercial and industrial sales programs. The former group concentrates on the largest customers; the latter handles the rest. SJE marketing to and acquisition of residential customers is contracted out to third parties.

A third group under this director has both utility and non-utility functions; its work comprises the principal focus of Liberty's examination of the marketing aspects of gas supply. This group, the *Marketing* group, provides marketing and advertising support for all business lines, including the

utility and the non-utility subsidiaries. Neither SJI nor SJE has a *mass market* sales force. These three groups report, through the director, to an SJI vice president. That SJI vice president also serves as SJE's president. Consequently, SJG's marketing work has been assigned to the same person who is in charge of SJE.

The Marketing group, which has both utility and non-utility responsibilities performs the following activities:

- Analysis of demographics in the SJG territory
- Design and execution of advertising campaigns
- Design and execution targeted marketing campaigns
- Design and placement of advertisements
- Developing and maintaining relationships with contractors for joint activities
- Supporting Marina Energy, primarily through trade show appearances
- Design and execution of a marketing and advertising plan for the South Jersey Energy Services Plus (*SJESP*), the non-utility affiliate that operates SJI's heating and cooling installation and service businesses (note that *SJESP* took over the appliance-service business from SJG in August 2004, after BPU approval).

2. Marketing Plans

During the Audit Period, SJG developed annual marketing plans, with the exception of 2001 and 2002, when the marketing group was reorganized and the sales representative function was re-engineered. These plans have not followed the same format in each year, but have generally included an overall assessment of the current situation, an analysis of the typical planning elements (strengths, weaknesses, competitive threats and opportunities), objectives, strategies for achieving them, and specific action items. South Jersey Energy and Appliance Services developed marketing plans in 2003 and 2004, and Marina Energy developed a plan in 2004.

The Companies do not prepare formal reports charting progress against marketing plans. Liberty addresses the distinct issue of reporting against strategic plans in its companion reporting addressing its *Management and Operations Audit*.

Appendix XI-1 to this chapter summarizes the key features of the marketing plans of the SJI companies. The following table summarizes the objectives set forth in the marketing plans since 1997.

Table XI-1. SJG Marketing Plan Objectives

Small Volume Markets	1997	1998	1999	2000	2003	2004
Add new on-main customers	x			x	x	x
Add new construction customers	x			x	x	x
Add new customers by main extension		x				
Develop new products and services	x	x				
Promote appliance sales	x			x		
Increase appliance services				x		
Support economic development, etc.	x	x				
Develop new markets		x				
Improve internal processes		x				
Large Volume Markets						
Grow large volume contribution			x			
Maintain large volume contribution				x		
Grow GSG revenues			x	x		
Maintain electric load			x			
Move interruptible customers to firm			x	x		
Counter risk of bypass			x	x		
Improve Major Accts. Group expertise			x	x		
Enhance SJL/SJG/SJE brand equity			x	x		

No plans for 2001 and 2002.

3. SJG Advertising Programs

SJG's advertising campaign has used radio and newspapers and has focused primarily on the conversion market. During the two years from October 2002 through September 2004, SJG ran 126 radio spots, using four different ads. All four ads targeted the conversion market, and ran at the beginning of the two heating seasons and at the height of the summer (because SJG also finances air conditioning installations). The ads clearly identified SJG as the entity involved, and did not mention any affiliates.

During that same period, the Company also ran about 240 ads in eight different newspapers covering various parts of its service territory. Thirteen of those ads ran in the summer and fall of 2003. They introduced South Jersey Energy Service Plus, and made no mention of SJG. The company also ran one general promotional ad. Of the reminder, most targeted the conversion market and the various promotions in effect at the time (*e.g.*, free financing, free heater, Preferred Contractor program) with a few targeting the new residential construction market.

4. 2004 Heater Conversion Program

SJG engaged in a "free heater" promotional campaign in 2004 targeted at existing residential gas non-heating customers. Utilities generally have recognized that adding gas appliances to customers who already have gas service, or who may not have service but are situated close to gas mains, can provide good margins. Toward that end, In August 2004, SJG began its free heater (furnace or boiler) program.

Company calculations showed that the average non-heating customer (who may have a range, water heater, dryer, or any combination of the three) used an average of 18 Dth/year, while an average heating customer (who may also have the same appliances) used an average of 88 Dth/year. An assumed [REDACTED] margin produced a [REDACTED]

_____ a year. Average cost _____.
The following table shows that calculation. These revenue, margin, and cost calculations yielded _____.

Table XI-2. Heater Promotion Program Costs

Cost Element	Cost
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Before screening, this program began with the group of approximately 19,000 active non-heating customers on the system. A company survey performed in 2001 showed that those customers heated primarily with oil, with some using electricity, and a few using wood and propane. The Company applied a series of screens to eliminate a number of customers; *e.g.*, apartment residents and bad credit risks, and ended up with a list of 6,920 SJG customer accounts as candidates for the program. The Companies assumed a 20 percent response rate and that half of the responses (approximately 690 customers) would accept the offer.

The offer extended to the target group of SJG non-heat customers was for a free, high-efficiency heater, to be installed by a South Jersey Gas *Preferred Contractor*. SJG originally extended the offer through October 31, 2004, with installation to be completed by year-end. The customer was to be responsible for removal of all old equipment, any necessary permits, and installation of the new equipment. All heaters would also be eligible for a \$300 rebate through the New Jersey *Clean Energy Program*. The Free Heater program would run concurrently with a financing program which had been in effect since 2002. Under that program, customers were initially eligible for up to \$8,000 for 5 years at 0 percent. SJG amended that program by changing the rate to 2.9 percent if the customer kept the rebate, or 0 percent, if the customer assigned the Rebate to SJG.

SJG contacted the targeted customers through telemarketing and direct-mail campaigns. Customers received a package that included a model home-repair contract, a financing application, credit plan disclosures, a notification of right to cancel the transaction (within three business days), and a certificate of completion to be signed by the customer and the contractor upon completion of the work. SJG Customers had completed 237 installations by December 31, 2004. The Company has extended the program through March 31, 2005 and expects that customers may install as many as 100 additional units.

SJG established the *Preferred Contractor Program* well before the 2004 heater promotion program. SJG set it up in 2002, as a group which "... has agreed to a set of standards that distinguishes them as a cut above the rest." The portion of Liberty's audit report addressing EDECA discusses this contractor program in detail, and addresses other aspects of the 2004 heater promotion program.

C. Conclusions

a. SJI's Market Planning & Forecasting group does not perform utility load forecasting.

The role of the marketing group in support of SJG is to add new utility customers and sales. The group seeks to identify growth opportunities by researching what drives customer additions; *e.g.*, new homes and conversions. They perform demographic analysis, typically through partnering with colleges or research organizations, to identify and target growth areas. The group provides only general, high-level guidance on demographic matters. SJG does not use the group's work products in preparing SJG's load forecast.

b. SJG's Marketing Plans have been fairly consistent in pursuing small volume conversions and new construction additions, but inconsistent in their other objectives.

SJG's marketing plans have placed a consistent emphasis on adding conversion and new construction customers in the residential and small commercial markets. SJG discontinued objectives with respect to appliance sales and service, and replaced them in 2003 and 2004 with similar objectives for the appliance business. By this time, SJI planning for this business envisioned the eventual approval of the transfer from SJG to SJESP. The plans do focus on the large-volume markets in 1999 and 2000. That focus disappeared by the time that SJG resumed market plans in 2003 and 2004.

The plans ostensibly drive marketing direction, but there does not appear to be a strong correlation between plan content and Company behavior. Table VI-1 above illustrates a lack of focus on residential customers in 1999 and a lack of focus on larger customers in all years except 1998 and 1999. Those apparent gaps and the absence of any marketing plans at all in 2001 and 2002 appear to be due to lapses in emphasis and inconsistencies in the planning process rather than changes in the direction of the company or individual customer segments.

Liberty observed differences between documented plans and actions, but did find a reasonable level of consistency in those actions over recent years. Liberty observed the following principal pursuits in those marketing actions:

- Add residential and small commercial load through conversions and new construction
- Add or retain large-volume load
- Enhance the SJI and all its affiliates' brand equity.

c. One clear element of SJG'S marketing strategy has been to convert interruptible customers to firm service by offering new classes of "semi-firm" or limited interruptibility service.

SJG recognized that it could enhance revenues by switching interruptible customers to some type of firm service. Such conversions would directly generate higher margins. They would also eliminate margin sharing (between customers and shareowners). Interruptible-service margins are subject to a BPU-approved margin sharing formula; firm service revenues are not.

Part of the Company's strategy, as stated in the marketing plans, was to make sure that the interruptible customers were interrupted. There have been situations where utilities that had not interrupted such customers for many years encountered substantial resistance when they finally had to interrupt them as conditions changed. However, the essence of interruptible service is that customers are to be interrupted for operational reasons, when reliability of supply for firm customers would otherwise be threatened. Interruptible sales customers should be interrupted when supply or space on the distribution system is unavailable, and interruptible transportation customers should be interrupted when the latter condition exists. Here however, SJG was considering interruption to be a marketing strategy, *i.e.*, an inducement to move to a more secure, more expensive service.

d. The free heater program fell far short of expectations but represented a reasonable utility-focused plan.

SJG uses a 5-year payback hurdle when examining incremental investments. The 2004 free-heater program's initially-projected period amounted to about six years, which made it marginal, but not unreasonable. The significantly lower-than-expected success rate, has, however, produced fewer conversions over which to spread the program's fixed costs. This result will extend the payback period significantly.

In any event, the total estimated program expenses amounted only to \$29,000 in fixed costs. Accordingly, the optimistic nature of the resulting sales projections had, at most, minimal cost impact on ratepayers.

D. Recommendations

38. Re-evaluate and reformulate marketing goals for interruptible service customers.

Elsewhere in this report, Liberty makes a series of recommendations as to how to go about addressing the gas supply assets situation at SJG, and the appropriate forum for doing so. Liberty believes that the resolution of those issues will go a long way toward addressing the interruptible service issue raised here. Interruptible service should also be addressed in that forum at a later date. In the interim, Liberty recommends that SJG cease any programs to transfer any additional customers from interruptible to firm services and eliminate any incentives to any employees associated with such transfers.

39. Develop a standard approach to marketing plans and provide periodic updates against the plans.

Year-to-year variations in the plans demonstrate an inconsistent commitment to, and inconsistent application of marketing plans. The plans should review each significant element of the business (*e.g.*, each customer class or group of classes or subclasses with similar characteristics) annually, even if the result of the review is to continue what they have been doing.

The Plans should also incorporate a measurement and a feedback loop, reporting progress against plan perhaps on a quarterly basis, so that course corrections can be applied or goals and objectives modified as necessary.

Appendix XI-1. Highlights of Marketing Plans

South Jersey Gas 1997

Objectives:

- Increase the efficient use of gas through addition of new customers
- Increase sales to exiting customers
- Retain existing load by promoting and selling high-efficiency gas appliances
- Develop new products and services to enhance revenues
- Support the marketplace as a location for corporate and industrial growth

Strategies:

- Restructure the marketing representative function
- Develop conversion programs for on-main or near-main customers
- Improve and streamline the “request for gas service” process
- Maintain the appliance sales stores, and promote gas fireplaces and water heaters; offer catalog sales outside of stores
- Promote the sale of gas commercial kitchen equipment
- Develop a comprehensive advertising program

South Jersey Gas 1998:

Objectives:

- Retain existing levels of sales
- Increase the efficient use of gas by increasing sales to existing customers
- Increase sales through addition of new, on-main customers
- Increase the efficient use of gas through the judicious extension of main
- Develop new products and services to increase revenue and profits
- Develop new markets
- Continue to support economic development within the marketplace
- Improve current processes to efficiently and effectively add customers and increase sales

Strategies:

- Promote and sell high efficiency appliances at Company stores though sales and special promotions
- Influence consumer appliance replacement decisions, at other appliance stores, to use gas
- Convert existing non-water heating customers to gas hot water
- Convert non-heating customers to gas and add additional gas appliances
- Convert on-main dwellings to gas customers
- Strengthen heating and plumbing contractor relationships to ensure they sell and install gas appliances
- Expand new home builders’ use of gas beyond heating and hot water
- New Service sentry Plan
- Develop Appliance and Accessory catalog
- Develop commercial appliance repair package

- Support economic development through membership in key community and civic groups, and participation in key industry groups and high profile community events and projects
- Review marketing representatives compensation packages
- Review new business process
- Develop alliances with other stakeholders, including new business contractors, HVAC contractors, builders, developers, plumbers, and retirees
- Streamline appliance installment sales paperwork for contractors

South Jersey Gas 1999:

The 1999 Plan focused on major accounts.

Objectives:

- Grow the contributions to margin of Large Volume customers by 7 percent
- Increase GSG and GSG-FT revenues by \$150,000
- Maintain current contact levels of electric generation
- Transfer all Absecon Island large volume service from interruptible to firm or limited firm
- Maintain load of industrial rate customers who are at greatest risk of by-pass
- Continue to grow the expertise of the Major Accounts Marketing Group sales force, and integrate it with other SJG and SJE marketing efforts
- Enhance the brand equity of SJG, SJE, and SJI

Strategies

- Grow the contributions to margin of Large Volume customers by 7 percent by converting existing contracts from interruptible to firm and expansion of firm loads applications
- Continue to perform energy audits on all schools, maintain relations with energy companies who may provide referrals and bids for gas applications, maintain contact with school administrators
- Maintain current contact levels of electric generation
- Establish a limited firm service tailored to the needs of Absecon Island customers and system constraints (e.g., 15, 30, or 60 days of interruptions)
- Convert several hospitals from interruptible to firm rate schedule; introduce gas cooling technology to hospital decision makers, architects and engineers
- Continue to grow the expertise of the Major Accounts Marketing Group sales force, and integrate it with other SJG and SJE marketing efforts
- Enhance brand equity by attending trade shows and through customer meetings

South Jersey Gas 2000:

Objectives:

- Add 4,550 net customers through residential new construction
- Add 2,700 net customers through residential conversions
- Add 1050 net customers through commercial conversions and new construction
- Increase merchandise sales
- Increase appliance service revenues

- Maintain the contributions to margin of Large Volume customers
- Increase GSG and GSG-FT revenues by \$236,000
- Offset increased competition for Major Account Group customers by securing long term contracts for and additional 10 percent of industrial customers
- Transfer 50 percent of Absecon Island large volume service from interruptible to firm or limited firm
- Maintain load of industrial rate customers who are at greatest risk of by-pass
- Continue to grow the expertise of the Major Accounts Marketing Group sales force, and integrate it with other SJG and SJE marketing efforts
- Enhance the brand equity of SJG, SJE, and SJI

Strategies:

- Provide literature, sales kits and coupons to builders in sample homes and for distribution to the general public; offer a home appliance package in model homes to large developers; simplify the fee structure; continue and enhance advertising/promotional program
- Increase staff; develop a more comprehensive and effective contractor program, acquire a sales lead and tracking system, improve main installation services, determine and implement effective direct mail campaign
- Identify, segment and target commercial opportunities using a purchased database, and develop a message to increase their sales; inform existing commercial customers of free services available, offer products through bill inserts, establish a more effective contractor program, identify all new construction projects
- Continue to search for innovative products and services, promote the Gas Advantage Stores, expand in-store specials, continue to emphasize the availability of contractors, offer and promote Service Sentry warranty plan, engage in various promotions
- Create and promote a brand for the appliance service business, identify market segments and target marketing, concentrate on direct marketing approach, expand role of telemarketing, develop new incentives and promotions and target for upgrades after promotional period
- Introduce long term agreements tailored to the needs of customers, expedite flex rates and reduce regulatory lag, convert interruptible customers to firm and interrupt any that do not, seek and pursue cogeneration possibilities
- Establish a limited firm service tailored to the needs of Absecon Island customers and system constraints (e.g., 15, 30, or 60 days of interruptions)
- Provide demonstration projects to showcase the advantages of gas
- Establish a plan to target commercial kitchens with savings from additional loads
- Approach AJTS with the use of gas for peak shaving
- Convert at least two schools to natural gas and two more from interruptible to firm
- Convert several hospitals from interruptible to firm rate schedule; introduce gas cooling technology to hospital decision makers, architects and engineers

During the 2001 and 2002, marketing plans were not developed. During that period, the Gas Advantage Stores closed, SJG Sales was re-engineered, and SJI Market Planning and Forecasting was developed.

South Jersey Gas 2001 and 2002:

Marketing plans were not produced in 2001 and 2002, due to the reorganization and re-engineering of the Gas Sales Department and the creation of the Marketing and Forecasting group.

South Jersey Gas 2003:

Objectives:

- Add 3,163 and 367 gross residential heating and non-heating customers, respectively
- Add 5,900 gross customers through residential new construction
- Add 210 and 460 gross commercial customers through conversions and new construction, respectively

Strategies:

- Continue the focus on on-main customers
- Build recognition and enhance the Preferred Contractor program
- Create a more comprehensive, accurate database of potential customers
- Focus on general awareness, continue affiliations, communicate with and educate builders
- Identify, segment and target commercial opportunities and new construction projects using a purchased data base, inform all current customers of services available, promote new technologies through bill inserts, develop a more effective contractor lead program

Appliance Service Business 2003:

Objectives:

- Increase the services offered, by adding installation of heating and air conditioning products
- Increase the total customer base for warranty contracts and time and material service work
- Increase the awareness of service offerings in the target population
- Increase market share

Strategies:

- Identify target markets
- React quickly and aggressively to changing market conditions
- Add several new lines of service (duct cleaning, heating and air conditioning installation and replacement, consider offering kitchen and laundry appliance service)
- Develop new sales channels, to replace bill inserts: telemarketing, employee leads program, customer newsletter, yellow pages advertising, coupon packs, newspaper/radio, interactive web site, affiliate partnerships
- Implement promotion and advertising plan
- Continue co-relationships and joint ventures
- Maintain competitive pricing
- Continue to play on the relationship with SJI

South Jersey Energy 2003:

Objectives: Add [REDACTED]

Strategies:

- Contract with Millennium for another door hanger program
- Develop relationships with home builders – benefits to homeowners and builders
- Implement a referral incentive program
- Expand HVAC contractor participation
- Initiate an update of the SJE commercial database
- Assess expansion into new markets in PSE&G and NJNG territories
- Assess expansion into PECO, PGW and Conectiv territories

South Jersey Gas 2004:

Objectives:

- Add 2,122 and 383 gross residential heating and non-heating customers, respectively
- Add 6,819 gross customers through residential new construction
- Develop “burner tip” growth initiative for 2005 launch
- Add 220 and 475 gross commercial heating customers through conversions and new construction, respectively
- Increase throughput of existing commercial customers by 125,000 Dth/year

Strategies:

- Continue the focus on on-main customers
- Enhance the Preferred Contractor program
- Develop a more effective on or near main database of potential customers
- Continue to focus on general awareness, continue affiliations, communicate with and educate builders
- Identify, segment and target commercial opportunities and new construction projects using a purchased data base, inform all current customers of services, promote new technologies available, promote new technologies through bill inserts
- Implement newly developed, more effective contractor program

South Jersey Energy 2004:

Objectives:

- Increase [REDACTED]
- Increase [REDACTED]
- Retain [REDACTED]
- Maintain [REDACTED]

Strategies:

- Continue/expand [REDACTED]
- Support [REDACTED]
- Continue [REDACTED]
- Review the [REDACTED]
- Expand [REDACTED]
- Implement [REDACTED]

- Create
- Initiate
- Purchase
- Become
- Complete

Appliance Service Business 2004:

Objectives:

- Increase the amount of services offered
- Increase the total customer base for warranty contracts and time and material service work
- Increase the awareness of service offerings in the target population
- Increase market share over the current competition

Strategies:

- Market the installation business to existing customers and the general population
- Continue to play on the relationship with SJI
- Continue to up sell and cross sell to existing customers
- Identify and research new channels to reach existing and new customer segments

Marina Energy 2004

Objectives:

- Establish the company as a regional expert in “Energy Plant” design and operation
- Secure a new project outside SJG’s territory
- Increase the percentage of closed proposals from the current 10 percent to 20 percent of those submitted.